

531-11



FRANKLIN  
INSTITUTE  
LIBRARY

# ASBESTOSTEEL *for* ROOFS AND WALLS

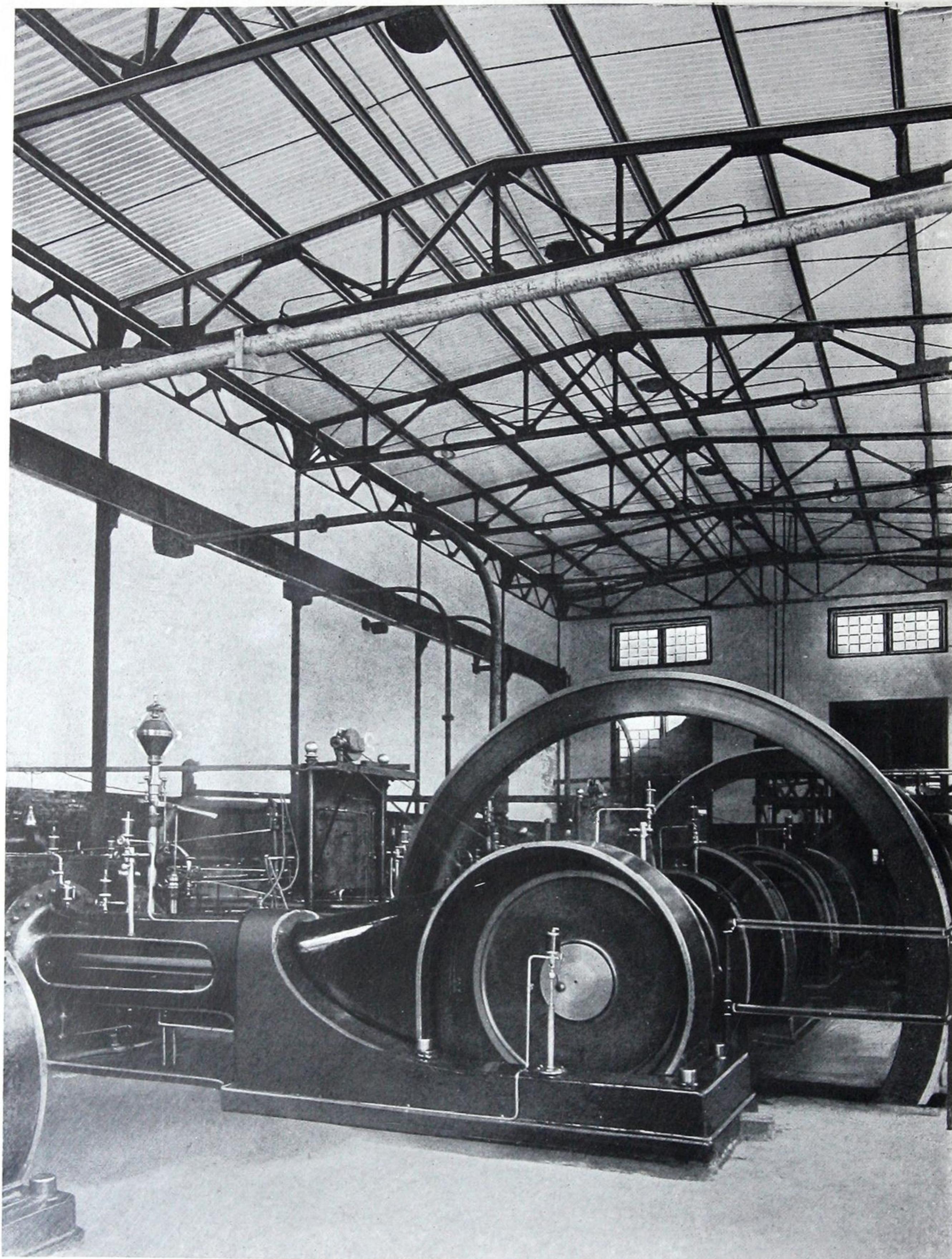
LIBRARY  
UNIVERSITY  
OF TORONTO



ASBESTOS  
AND  
ROOFS

JAN 11 1915





POWER HOUSE OF THE PENNSYLVANIA RAILROAD COMPANY, AT PITCAIRN, PA.  
Showing the underside of the Asbestosteel roof. A ceiling combining the beauty of snow-white finish with  
architectural relief in the form of rectangular corrugations, is obtained

# ASBESTOSSTEEL

## *for Roofs and Walls*



Copyright 1914  
Asbestos Protected Metal Company

Asbestos Protected Metal Company  
Beaver Falls, Pa.

## ASBESTOSTEEL FOR ROOFS AND WALLS

THE ASBESTOS PROTECTED METAL COMPANY some years ago solved the problem of protecting sheet-steel from corrosion through the development of a process whereby the steel is covered on both sides with a uniform coating of asphalt, which in turn is protected from fire and weather exposure by a layer of hardened and waterproofed pure asbestos felt laid over and embedded in the asphalt while still hot and soft. This is done without in any way sacrificing the advantages inherent in corrugated sheets for roof and wall construction.

Asbestos Protected Metal has been used in actual construction under all manner of conditions and stands today proven the only lasting sheet-metal on the market.

Ordinary sheet-steel being regarded as a short-lived material, practice has developed uses for it only in structures more or less temporary in character.

Asbestos Protected Metal, being a permanent material, presents possibilities absolutely new and hitherto unapproached by any sheet metal. Not only does it displace sheet-steel from the field considered its own, but when combined with concrete and other similar materials, it can be used to great economic advantage in the highest class of *permanent* structures.

This Bulletin is devoted to the special use of Asbestos Protected Metal in connection with concrete for the construction of roofs and curtain walls, a type of construction which is called Asbestosteel.

Asbestos Protected Metal is made by an automatic and continuous process. The steel sheets are heated to a uniform temperature and passed into a hot bath of the asphalt. From this tank the sheets are carried upward through "squeegee" rolls, a giant wringer, to press the asphalt tight to the steel and make the coating perfectly uniform and free from air pockets. The sheets pass through a set of press-rolls between two sheets of the asbestos felt which are pressed into the hot asphalt. From here it is carried by idlers, stacked, and allowed to cool gradually under pressure.

The sheets are then trimmed and corrugated. The corrugations are rectangular with round corners. The vertical sides are in line with the direction of load application and therefore offer maximum resistance to bending. Were they inclined or corrugated at an acute angle, it would require a much heavier sheet to give the same stiffness. Finally the sheets are passed through the saturating machine, which renders them impervious to moisture.

## ASBESTOSTEEL

Asbestosteel roofing consists of three essential elements:

1—Asbestos Protected Metal, which serves as the self-centering form for the concrete covering, as the finished ceiling, requiring *no under-side plastering*, and as strength contributing member of the construction.

2—Concrete which fills and strengthens the corrugations, distributes the load, and provides a suitable surface for the application of waterproofing.

3—Steel reinforcement to provide additional strength to that afforded by the Asbestosteel in cases of heavy loads.

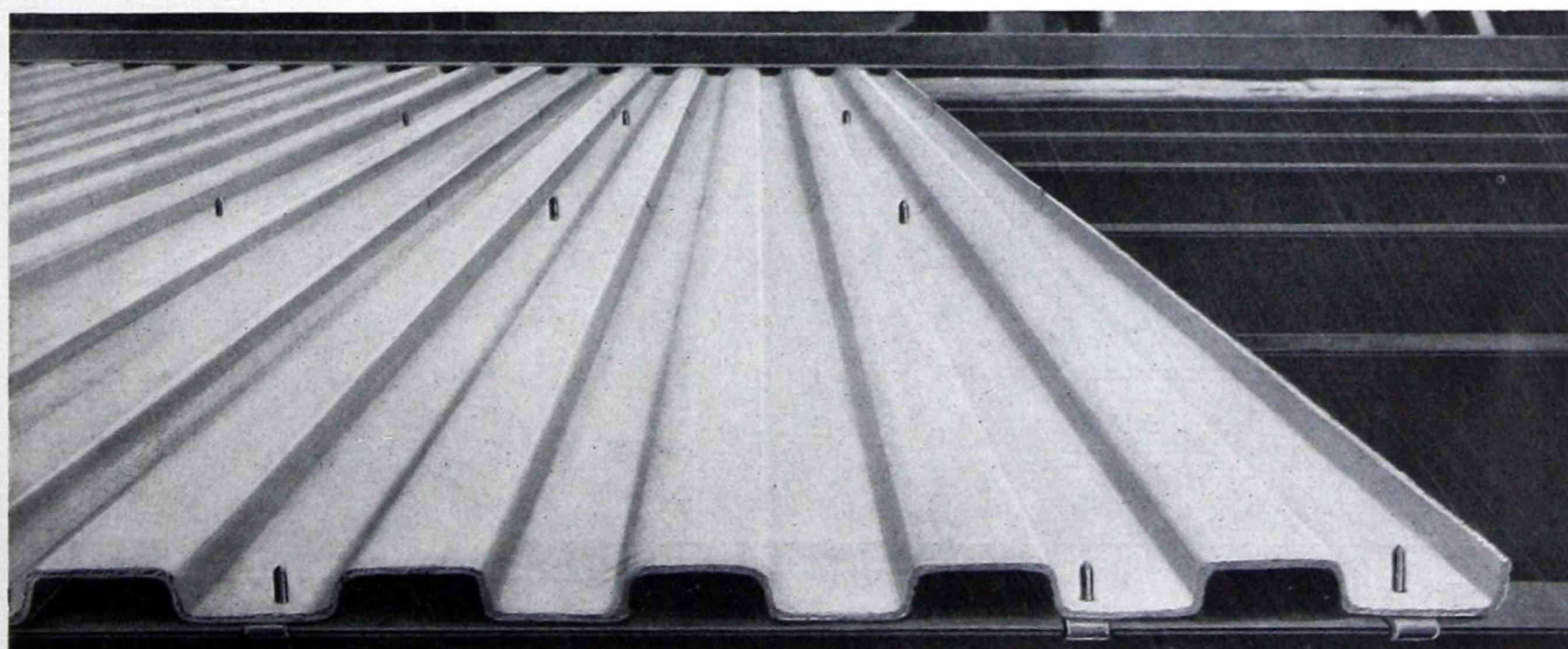
Asbestos Protected Metal is the keystone of the combination. It is made up of four materials, each serving a distinct and useful purpose.

(a) Special Open-hearth Sheet-steel is the stress resisting material. It is especially rolled and annealed, and is shipped to the factory in sealed packages absolutely free from grease or dirt of any kind.

(b) Asphalt is the covering which hermetically seals the steel and absolutely protects it from rust or corrosion. This material is the result of extensive experimentation. It is free from acids and inert matter and furnishes a permanent viscous, adhesive coating for the steel.

(c) Asbestos felt serves to protect the asphalt from heat, light and mechanical injury, and adds to the resistance to heat and fire. This Asbestos felt is also an original development. It is made in our own mills and contains *nothing* but pure long fiber asbestos.

(d) Special white waterproofing is applied to the surface and forced into the body of the asbestos to render it waterproof and increase its wearing qualities.



RIVETS AFTER DRAWING THROUGH SHEET

The great strength of the Asbestosteel form lies in the rectangular corrugations. The *vertical sides* supported against lateral flexure by the concrete offer maximum resistance under the load.

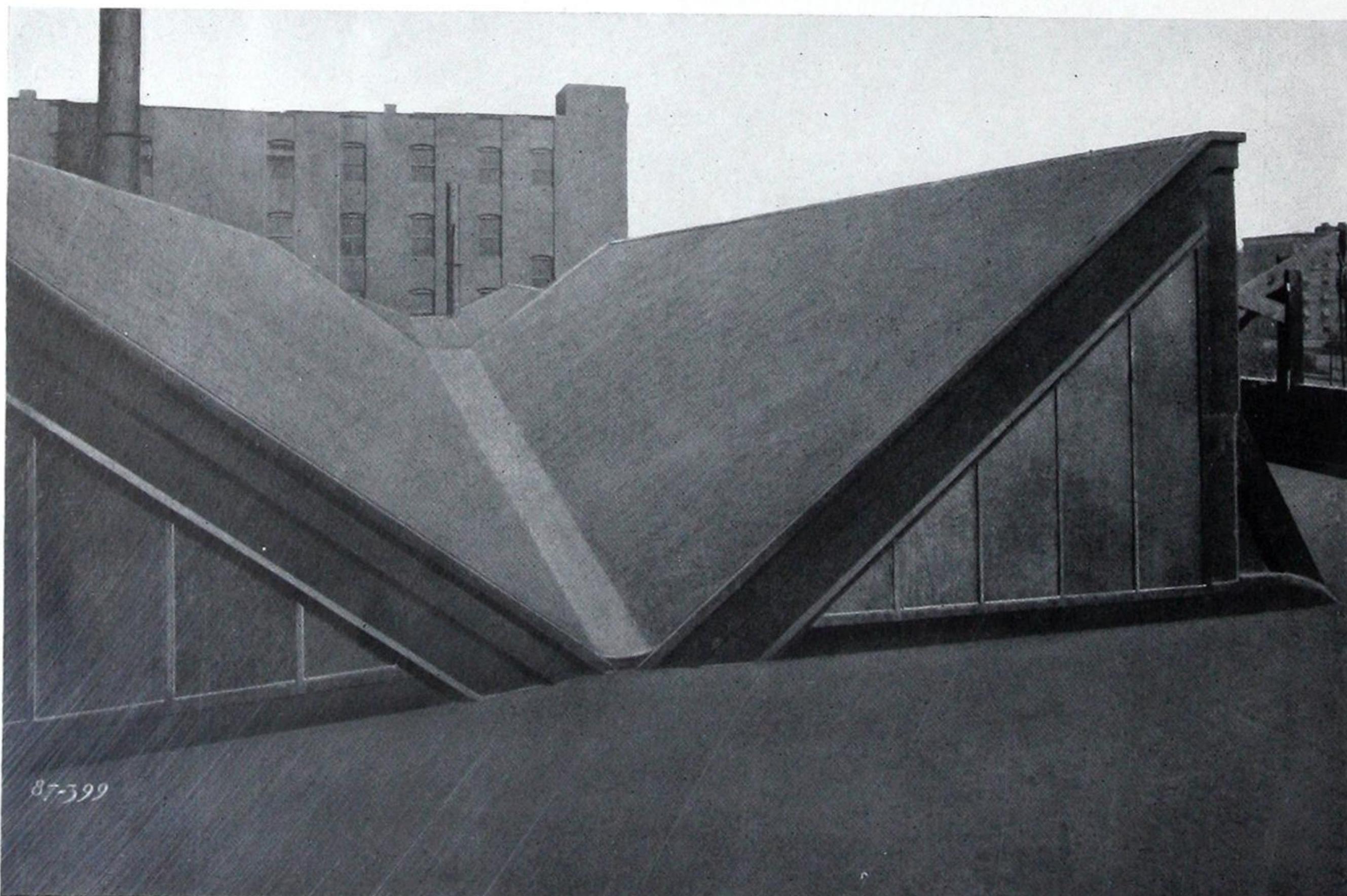
## ROOF CONSTRUCTION

The Asbestos Protected Metal is laid directly on the purlins and fastened by special self-punching clip-rivets. No wooden furring strips are necessary. This part of the operation can be more quickly and more easily executed than the erection of an ordinary corrugated steel roof, and the result is infinitely more satisfactory.

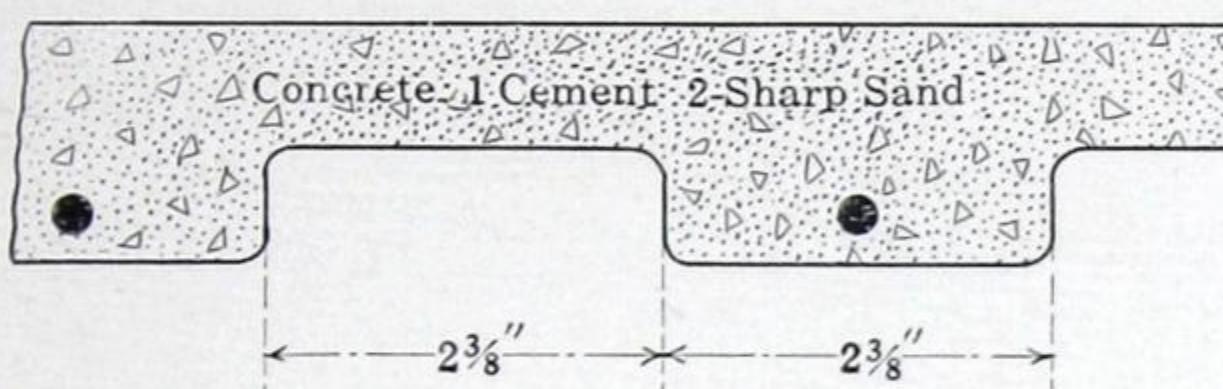
The sheets are furnished in lengths up to twelve feet. A purlin spacing of four feet is recommended. Spans up to ten feet may be used, although spans over five feet usually require temporary shoring during construction. (See table on page 20.)

Having completed the Asbestos Protected Metal roof, the concrete or cement mortar, reinforced if required, can be laid on whenever it is convenient. This completes the Asbestosteel construction, on top of which any desired waterproof covering may be applied. The underside requires *no back-plastering*, because the Asbestos Protected Metal needs no protection from corrosion and without further treatment gives a fine ceiling finish.

Reinforcing steel fabric or rods may or may not be used, according to the wishes of the engineer. It is not necessary for strength, except in case of



NEW YORK EDISON COMPANY POWER PLANT, NEW YORK  
Metropolitan power house construction demands the use of the best and most permanent materials and equipment



demand for self-reinforcing, light slabs, incorporating the use of a permanent metal form, has resulted from appreciation of this fact.

Heavy slabs must be poured with great loss of form lumber, and no practical, removable sheet metal form has yet appeared.

The known types of combined reinforcing and centering sheets fall short in their latter capacity, as they are not capable of carrying the wet concrete on anything but short spans. As reinforcing metal they are fundamentally weak, because they are so thin that their destruction by rust is quickly accomplished, and rusting frequently commences before they have been installed in the building.

large spans or heavy floor loads. The necessity for pouring slabs heavy enough for *pavements*, and supporting them as roofs with heavy foundations and framework, no longer exists. The



NEW YORK EDISON COMPANY POWER PLANT, NEW YORK  
Showing underside of Asbestosteel sawtooth construction

## PROPERTIES OF ASBESTOSTEEL ROOFING

Asbestosteel roofing has been in actual use now for several years and has proven more than was ever claimed for it. It is being specified regularly and exclusively by a great many of the leading construction engineers and builders because it has made good.

Asbestosteel roofing is the first and only steel permanent form that is absolutely rust proof and requires no back plastering or work from the underside. It is the only permanent form in which the steel reinforcing mesh or rods are protected from damage by corrosion or fire. The chief reasons for the unqualified success of Asbestosteel roofing we give below:

1—*Mechanical Strength.* Because of the straight sided corrugation and the freedom with which reinforcement can be used Asbestosteel roofing is stronger per unit of weight than any other known type of construction. Asbestosteel furnishes a scientifically designed reinforced concrete slab, the reinforcement being sufficient to support all superimposed loads irrespective of the strength of the Asbestosteel



THE AMALGAMATED PHOSPHATE COMPANY, CHICORA, FLORIDA

This power-house has an Asbestosteel Roof with Corrugated Asbestos Protected Metal Siding and Asbestosteel Lath partitions. The proper selection and use of these products make it possible to construct buildings for all commercial purposes that are eminently suited to individual requirements and at the same time embody at low cost all that is desirable in modern construction.

form which is placed under the slab and which is thus in tension. Therefore, Asbestosteel does not rely for its strength upon a thin, corrosive metal sheet or mesh, protected merely with a skim coat of plaster, which is porous, absorbs moisture and hastens the corrosion of the steel. The strength of concrete in tension is negligible. The efficiency of a roof slab, so far as load-carrying is concerned, therefore depends entirely upon the steel embedded in it. When the steel is in mesh or sheet form, and deteriorates, the roof so reinforced is no longer safe. Because of the perfect protection of the Asbestos Protected Steel form from corrosion, and the complete embedding of the steel reinforcement in concrete, Asbestosteel roofing retains its maximum strength permanently. Actual tests made by applying a uniformly distributed load to finished slabs are tabulated in the accompanying table taken from the *Concrete-Cement Age*, January, 1913. As will be noted, a material saving in concrete is effected by this form of construction.

### LOAD TESTS OF ASBESTOSTEEL SLABS

Slab	Span	Maximum Thickness of Concrete	Average Thickness of Concrete	Gauge A. P. M.	Cracked at Lbs. per Sq. Ft.	Ultimate Load Lbs. Per Sq. Ft.	Sq. Ft. Covered by 1 Cu. Yd. Concrete	Weight of Slab Lbs. Per Sq. Ft.	Reinforcing Rods
A	4'	1 $\frac{1}{2}$ "	1 $\frac{1}{8}$ "	24	265	613	288	15 $\frac{3}{4}$	None
B	4'	1 $\frac{1}{2}$ "	1 $\frac{1}{8}$ "	26	226	466	288	15 $\frac{1}{2}$	None
C	4'	1 $\frac{1}{4}$ "	$\frac{7}{8}$ "	26	262	398	370	12 $\frac{1}{2}$	None
D	4'	1 $\frac{1}{4}$ "	$\frac{7}{8}$ "	26	272	381	370	12 $\frac{1}{2}$	None

2—*Corrosion Proof.* The Asbestos Protected Metal of the permanent form is perfectly protected from corrosive agents, either moisture or acid, by a permanent and absolutely impervious coating, as described on page 4. Consequently the sheet steel is safe from deterioration. The steel reinforcement is protected by at least  $\frac{3}{4}$ " of concrete which in turn is protected from moisture by waterproofing on the top and Asbestos Protected Metal on the bottom.

3—*Heat Insulation.* The coverings of asphalt and asbestos greatly increase the heat resistivity, thus minimizing condensation in cold weather. By using non-conducting materials (for instance gypsum or cork) in conjunction with asbestosteel the heat insulation can be increased to almost any desired degree. Special problems, such as non-condensing roofs for paper mills, cold storage warehouses, etc., can be solved with Asbestosteel and show an enormous saving.

4—*Fire Resisting.* The insulating power of Asbestos Protected Metal and the fireproof character of the asbestos covering make Asbestosteel highly resistant to fire. In ordinary reinforced slabs in which permanent steel forms are used, the effect of the fire is to crack the under-side plastering and expose the reinforcement to the direct action of heat, destroying its strength and causing it to collapse. Asbestosteel slabs have their reinforcement embedded in solid concrete and the concrete is protected on the underside by Asbestos Protected Metal.

5—*Installation Labor.* In point of minimizing time, labor and construction plant, Asbestosteel roofing is successful to a superlative degree. It is laid directly upon the purlins without furring strips, fastened by special self-punching rivets and the sheets joined to each other by clips or bolts, and then covered by concrete. It requires no back plastering and therefore no scaffolding. The successive stages of construction are well illustrated throughout this bulletin. As will be observed, all work of erection is done from the top.

6—*Weight.* The weight per unit strength is very low. This reduces the cost of the structure as a whole, since it minimizes the roof, column and foundation loads without sacrificing any of the desirable characteristics that make for permanent construction.

7—*Appearance.* The underside of the Asbestosteel roof is very pleasing in appearance. The corrugations give a beamed effect and the pure, clean white color of the asbestos aids in diffusing the light and improves working conditions within the building.

8—*Cost.* The sum and substance of the seven properties set forth above is low cost. A few reasons for low cost are:

- 1—No back plastering.
- 2—No scaffolding.
- 3—No loss of cement by seepage or drip.
- 4—No allowance for corrosion.
- 5—No maintenance.
- 6—No confusion or dirt within the building.
- 7—No forms to be taken down after the concrete is poured.
- 8—Minimum dead roof load.
- 9—Reduction in weight of purlins, columns, and foundations.
- 10—Time and labor-saving construction methods.
- 11—Efficient utilization of strength of materials.
- 12—Low fire insurance rates.



PHILADELPHIA AND GARRETSFORD RAILWAY COMPANY, PHILADELPHIA, PA.

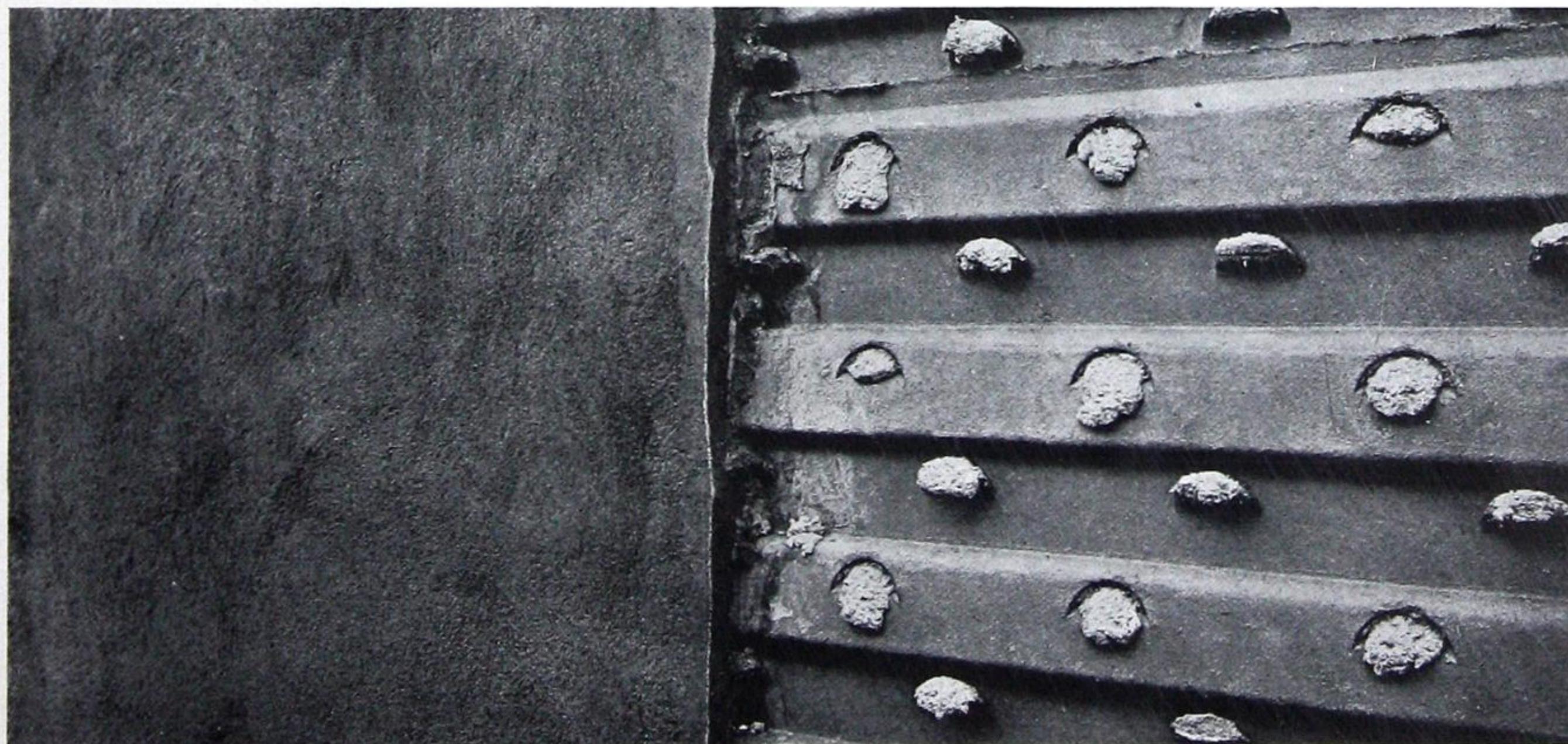
The roof of this sub-station is of Asbestosteel construction. Note the pleasing effect of the ceiling—obtained without back-plastering or work of any kind on the underside, all work having been done from the top. The efficiency and light weight of the Asbestosteel slab is evidenced by the wide spacing of the structural supports.

## ASBESTOSTEEL LATH FOR WALLS AND CEILINGS

Concrete curtain walls reinforced with steel lath have proven unsatisfactory wherever subjected to moisture, because it is impossible to protect the reinforcement from corrosion with the amount of concrete that is used in walls of this type. Asbestosteel lath has solved the problem of exposed concrete curtain walls and partitions. It is the first and only absolutely rustproof steel reinforcement that is in no way dependent upon the concrete for protection.

Asbestosteel lath is made from Asbestos Protected Metal corrugated sheets similar to those used for Asbestosteel roof construction, except that they have crescent-shaped cuts or rectangular holes punched into them. These sheets may be used as lath for either exterior or interior wall surfaces, or they may be plastered on both sides and thus serve as curtain walls. The sheets are perforated for use with the corrugations vertical or horizontal, depending upon the framing of the side walls. The sheets with rectangular holes are for ceiling construction. The vertically corrugated sheets may be erected without studs or girts. They are regularly made in lengths up to 12 feet. The horizontally punched sheets are carried in lengths up to 10 feet.

The plaster or concrete is applied in the usual manner, except that there is much less waste. The scratch coat is put on with sufficient pressure to force it through the openings and into the corrugations. A glance



ASBESTOSTEEL LATH, HORIZONTAL TYPE  
Showing plaster locked in crescents

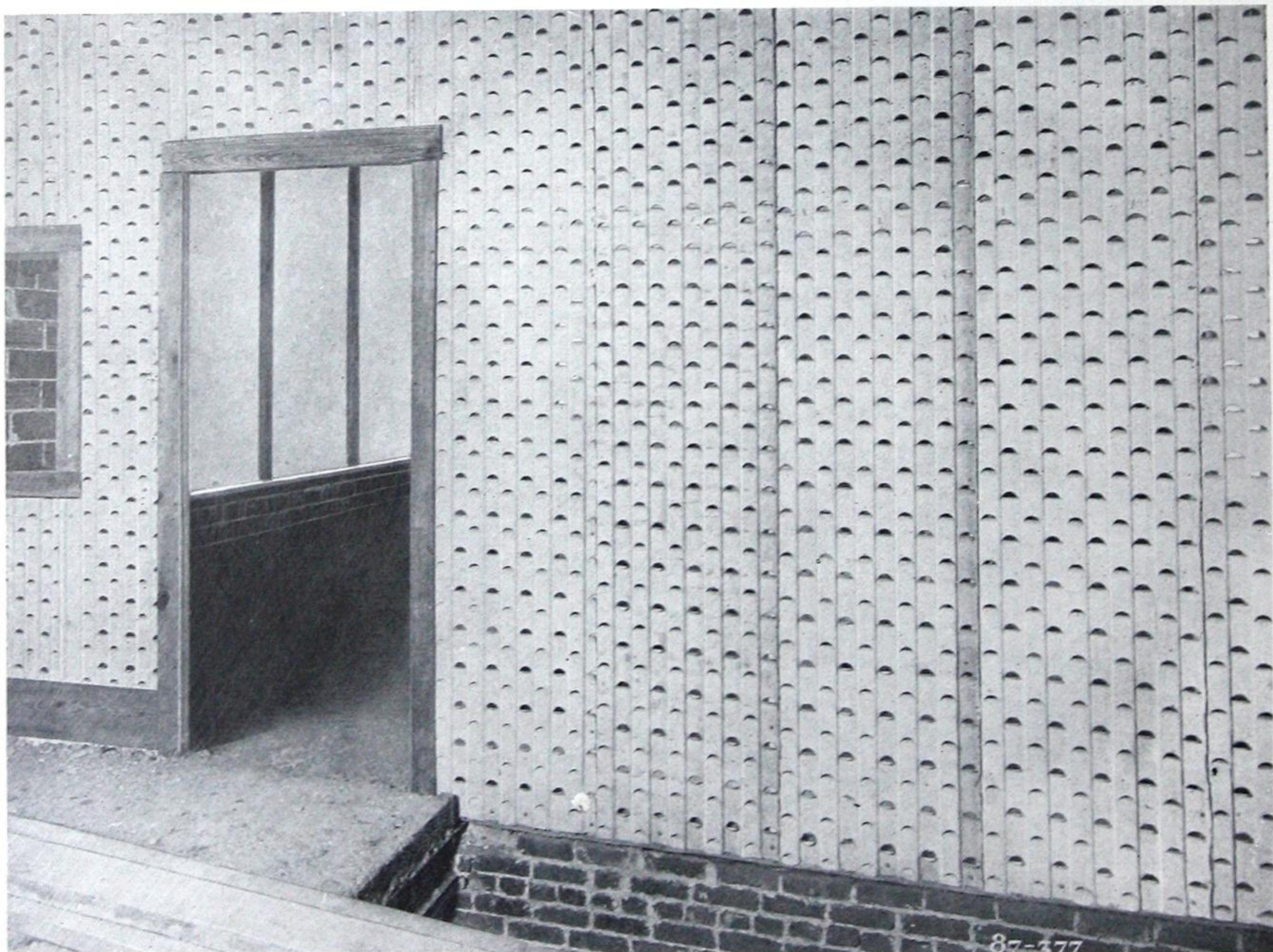
at the illustration on page 11 will indicate how the plaster in these openings is uniformly supported and virtually locked to the reinforcing Asbestosteel lath. Before the scratch coat is dry the finish coat should be applied.

Asbestosteel walls and ceilings possess the same valuable characteristics as Asbestosteel roofing.

1—*Mechanical Strength.* Because of the rectangular corrugations Asbestos Protected Metal lath is stronger than any other type of steel wall reinforcement and consequently it requires a correspondingly less complicated framing which simplifies construction and reduces the cost of labor and material.

2—*Corrosion Proof.* Asbestosteel lath being perfectly protected from corrosion independently of the concrete retains its strength indefinitely. A plastered wall will almost invariably transmit dampness to its inner side and will crack. The unprotected metal reinforcement embedded in such a wall becomes moist and rusts.

3—*Fire-resisting.* There are two factors that make Asbestosteel walls highly fire-resistant. First, the concrete and the reinforcement do not deteriorate from corrosion as in the case with all other types of steel reinforcement, and secondly, the steel is protected from heat by its asbestos covering.



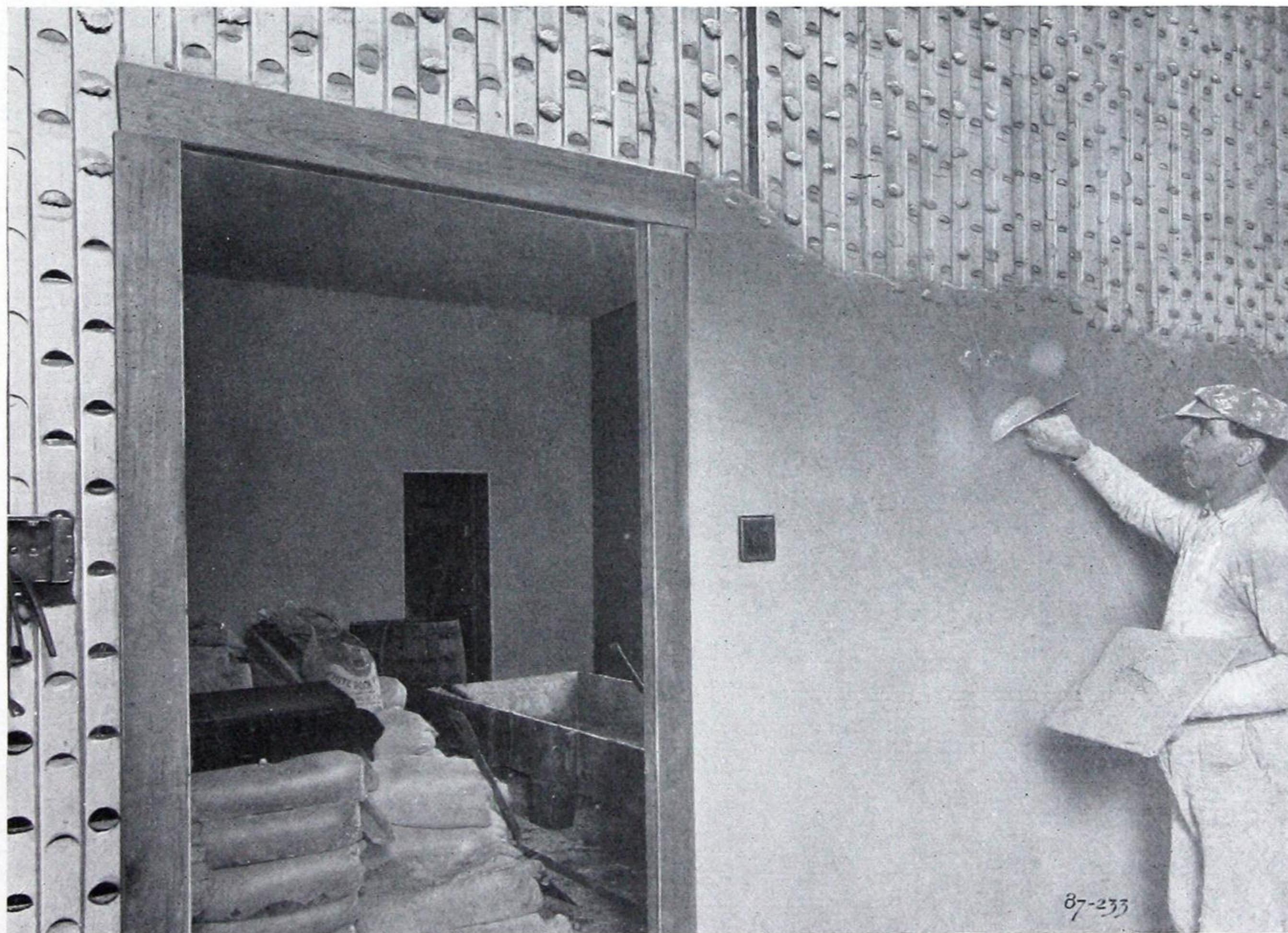
PITTSBURGH SEAMLESS TUBE COMPANY

Partition walls of Asbestosteel lath before application of concrete. They are strong and light and occupy less space than any other permanent wall

4—*Installation Labor.* The labor of erection is small and requires no special skill. The framing itself is always considerably simplified and in case of vertically corrugated sheets no studs or girts are used. The plaster or concrete clinches easily and perfectly in the openings of the sheets which have been carefully proportioned to give the best results as to ease of application and strength.

**Asbestosteel for Stucco Walls** Asbestosteel lath is also the best material available for use in connection with stucco work. It is permanent and rust-proof. On account of its high heat resistivity it keeps the building cool in summer and makes it easy to heat in winter. The usual stains resulting from rusting of metal lath are not to be found on the surfaces of Asbestosteel stucco. It is easily erected, is moisture-proof and of minimum thickness.

**Interior Walls** For interior wall construction where moisture does not enter as a factor and therefore corrosion is not a menace, we recommend a corrugated steel lath exactly similar to the Asbestosteel lath except that the protective coatings are omitted. This type of construction has all the advantages of the protected type with the exception of non-corrosion and consequently we recommend it only for use in places where corrosion is not possible.

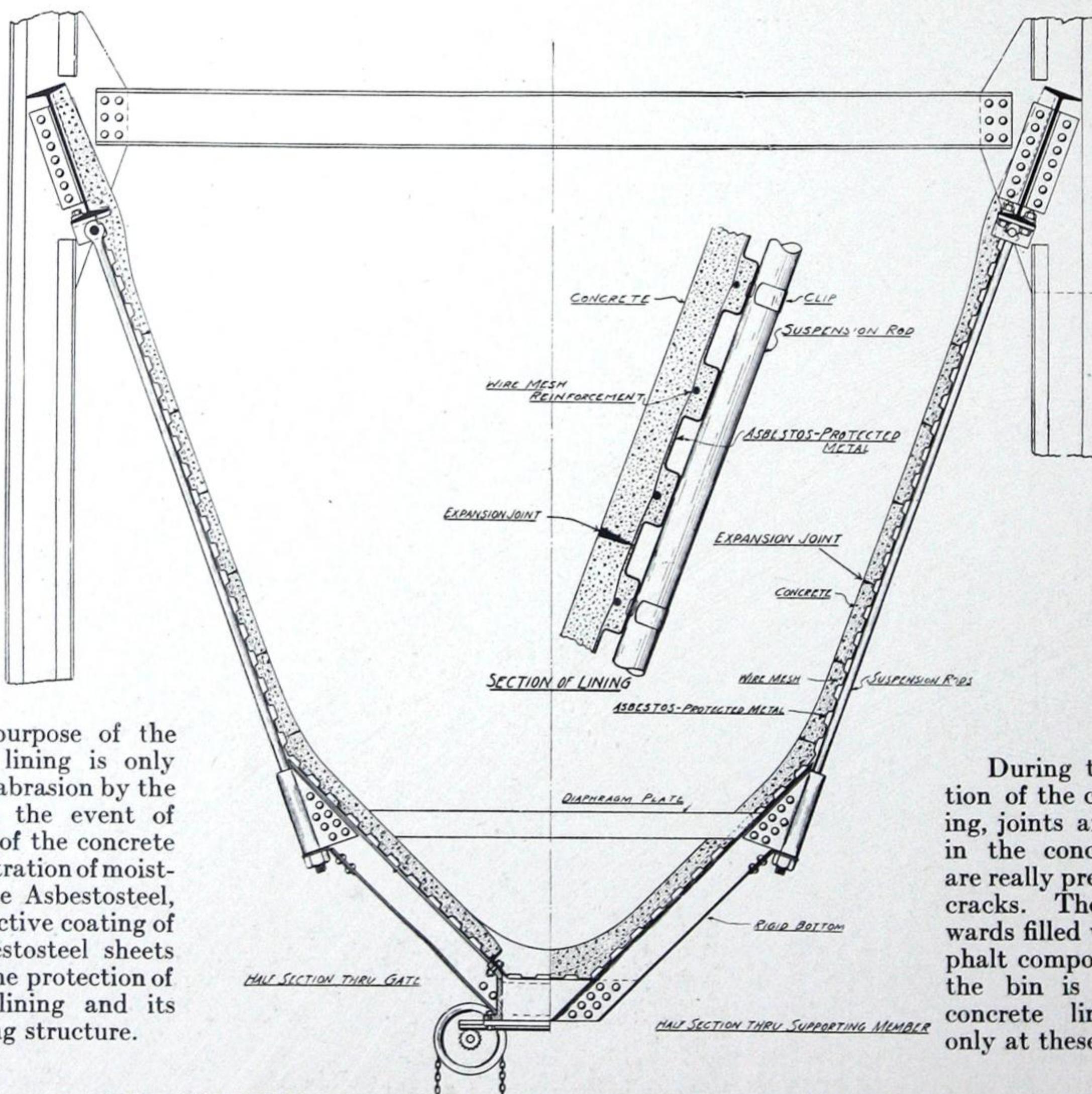


PITTSBURGH SEAMLESS TUBE COMPANY  
Showing application of concrete to partition walls

## ASBESTOSTEEL FOR COAL BIN CONSTRUCTION

One of the special uses to which Asbestosteel is particularly well adapted is coal bunker construction. It furnishes a permanent form that is both moisture and acid proof and requires no outside finish or covering.

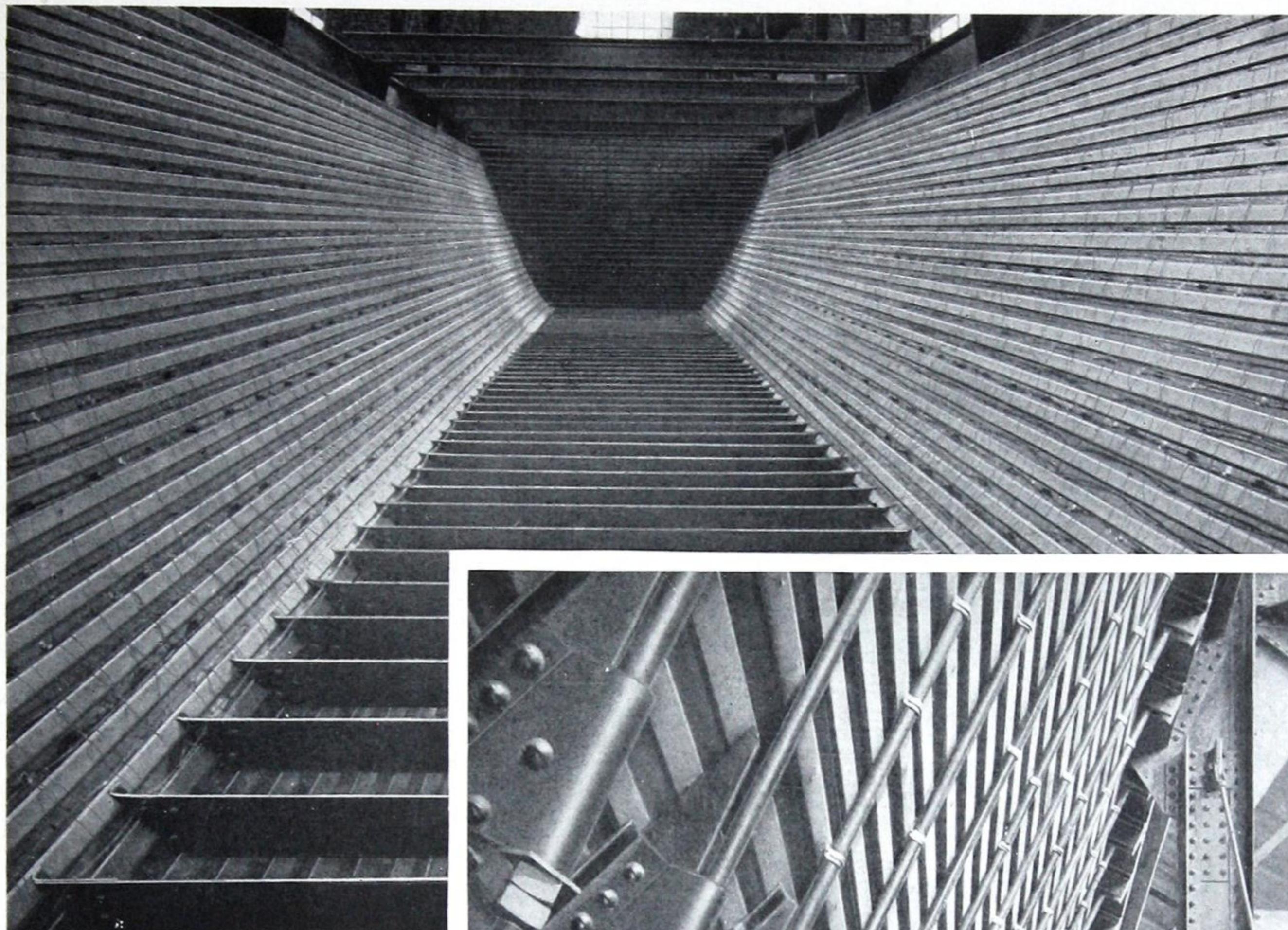
When coal is wet the sulphur content combines with the moisture to form sulphuric acid. When brought into contact with steel this acid solution immediately attacks it. Therefore, bins constructed of steel plates are subject to continuous deterioration. To overcome this, concrete bins have been used, as concrete is to some extent resistive to these conditions. Other difficulties arise in use of concrete linings, however, and to a great extent militate against their use in coal bin construction. However, the load in any bin is constantly changing and the concrete lining is subjected to variable bending stresses. Small cracks appear in the concrete and the acids quickly penetrate to the steel plate on which the concrete is supported, or to the steel reinforcement embedded in the concrete. Rusting of the steel follows.



The purpose of the concrete lining is only to resist abrasion by the coal. In the event of cracking of the concrete and penetration of moisture to the Asbestosteel, the protective coating of the Asbestosteel sheets insures the protection of the bin lining and its supporting structure.

During the application of the concrete lining, joints are provided in the concrete which are really predetermined cracks. They are afterwards filled with an asphalt compound. When the bin is loaded the concrete lining bends only at these points.

BAKER SUSPENSION TYPE OF BIN—ASBESTOSTEEL CONSTRUCTION

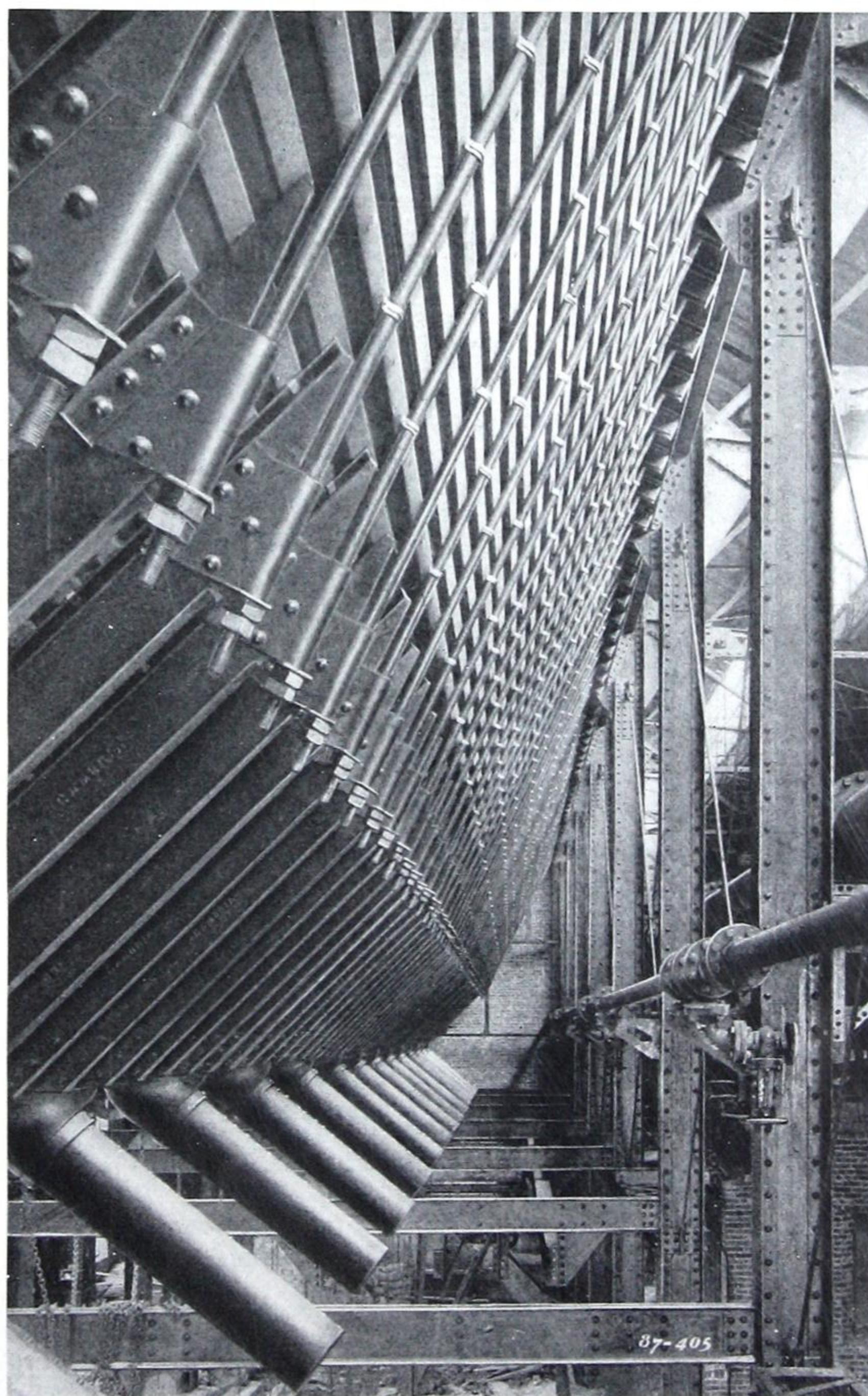


Interior view showing Asbestosteel sheets and steel reinforcement in place before the application of the concrete.

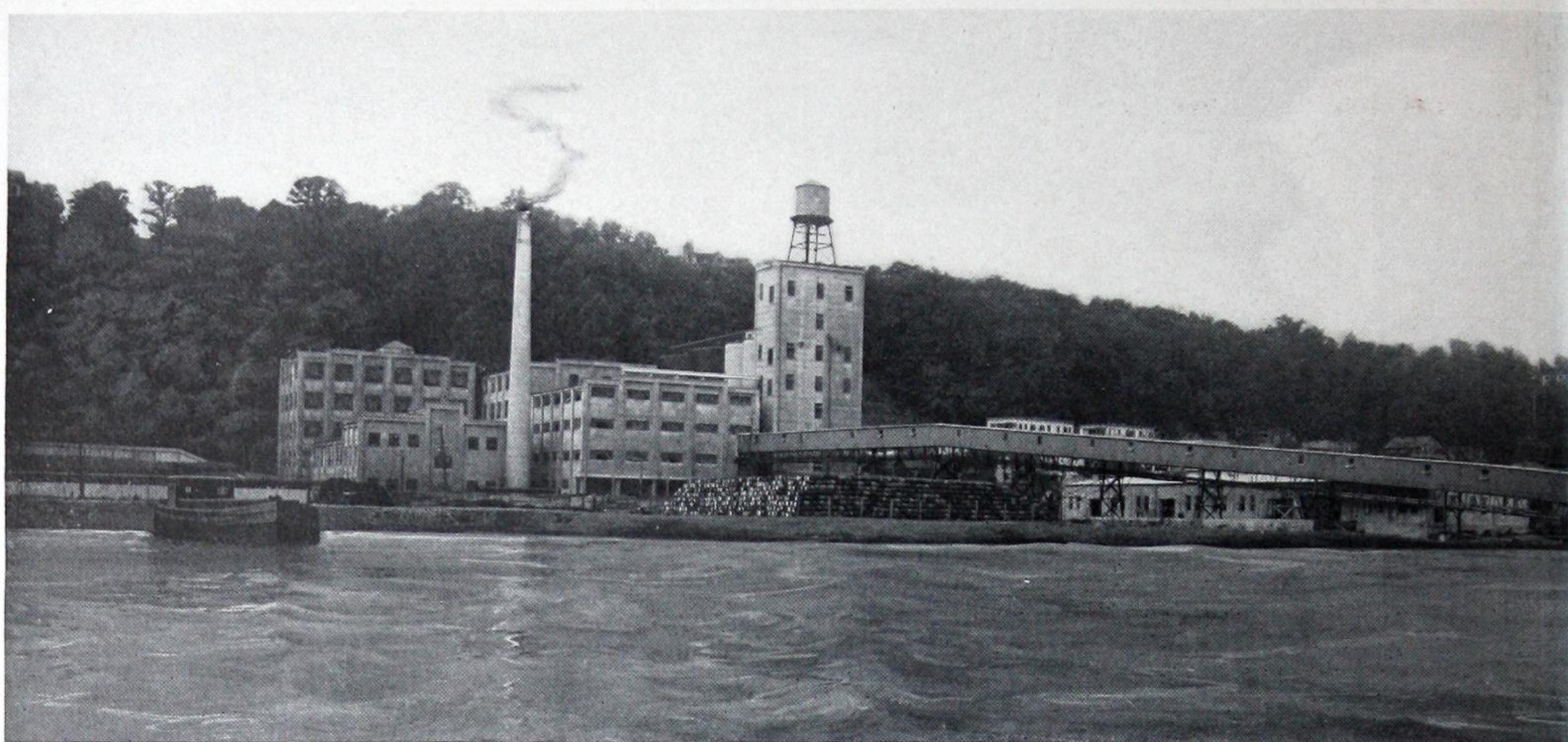
**BAKER SUSPENSION TYPE OF  
BIN—ASBESTOSTEEL  
CONSTRUCTION**

This bin is designed to reduce bending stresses to a minimum. The lower portion where the maximum load occurs is carried by a heavy structural steel frame while the upper portion is supported with flexible steel tension rods. Corrugated Asbestosteel Sheets are laid over the steel framework and attached to the frames and rods by special clips. The inner lining of concrete varying in thickness from  $1\frac{1}{2}$  to 4 inches is then applied. The outer surface of the bin requires no plastering or other finish.

Exterior view showing outer surface of the Asbestosteel construction completed.

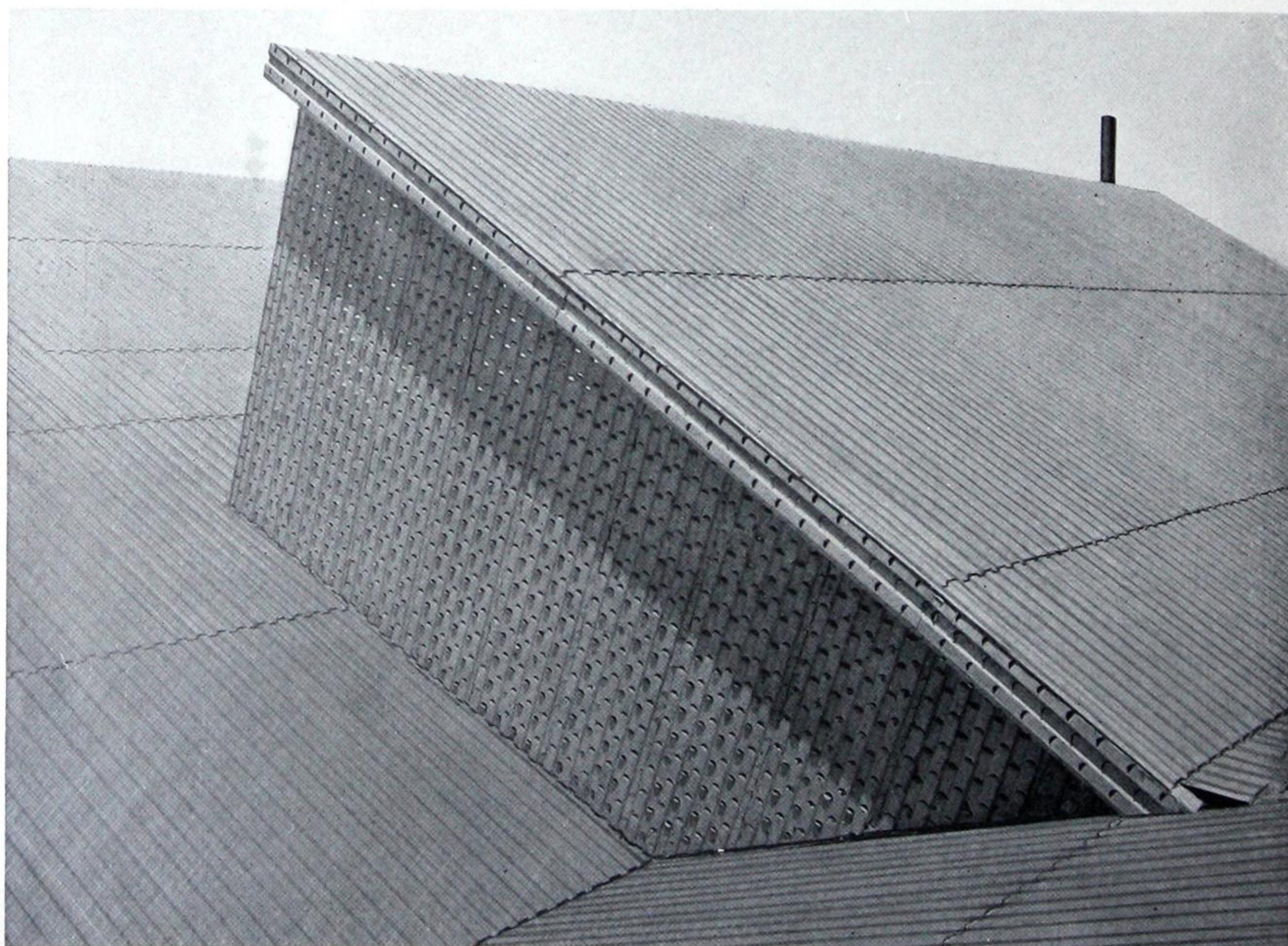


ASBESTOS PROTECTED METAL COMPANY

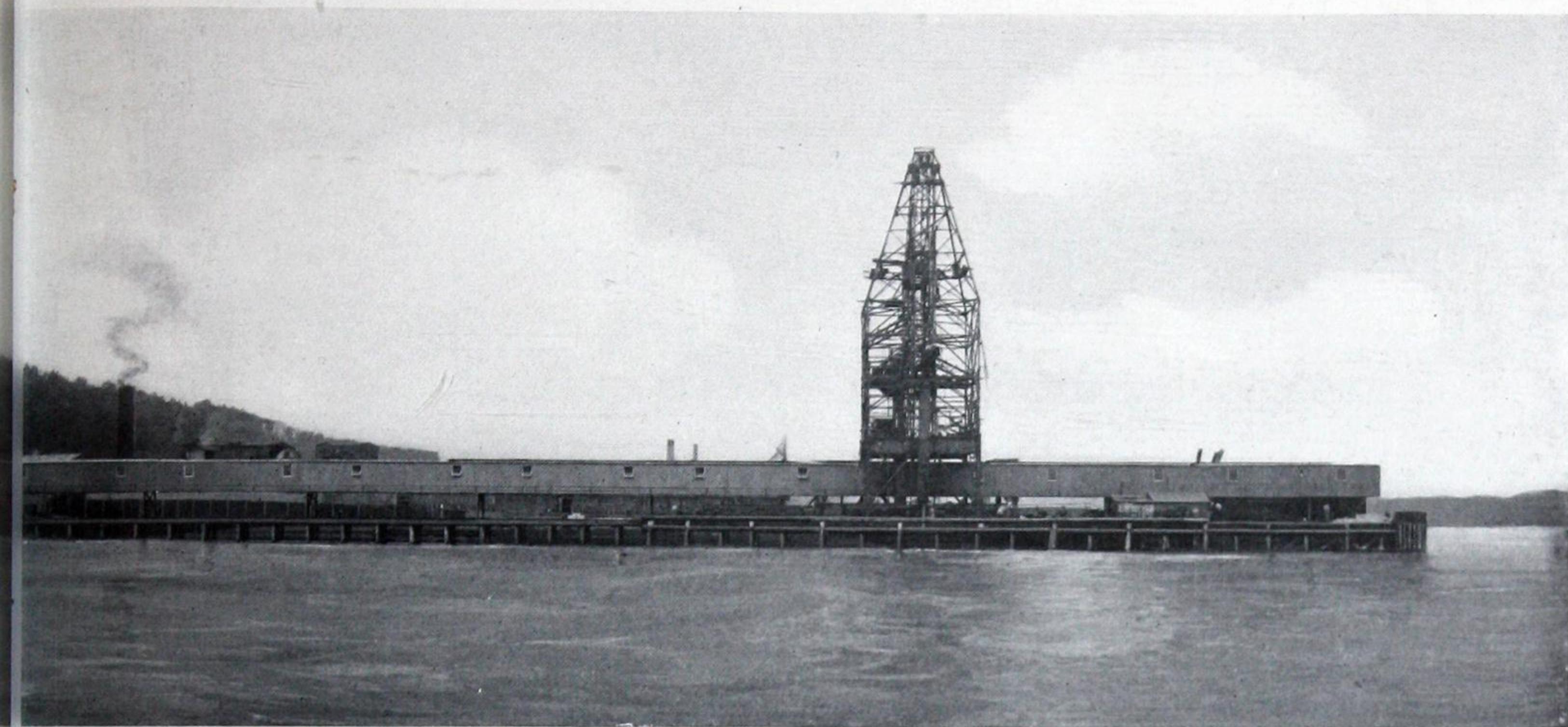


GENERAL VIEW OF THE EDGEWATER, N. J., PLANT

The roofs and sides of the gallery, about 1000 feet long, are covered with Corrugated Asbestosteel.

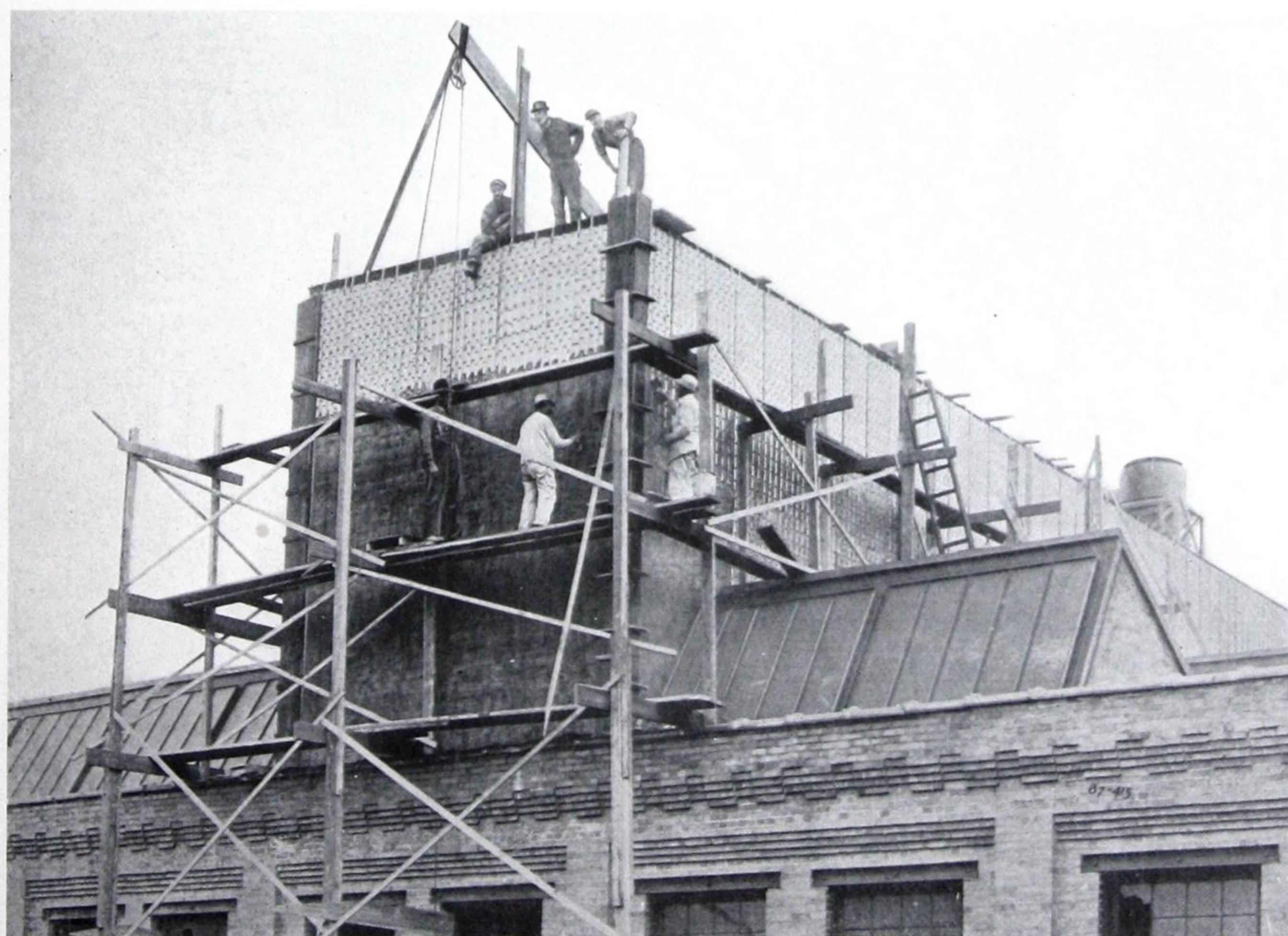


A distinct advantage of Asbestosteel construction is that the Asbestos Protected Metal in itself is a truly permanent structure and will not deteriorate by exposure to the elements.



INT OF THE MIDLAND LINSEED PRODUCTS CO.

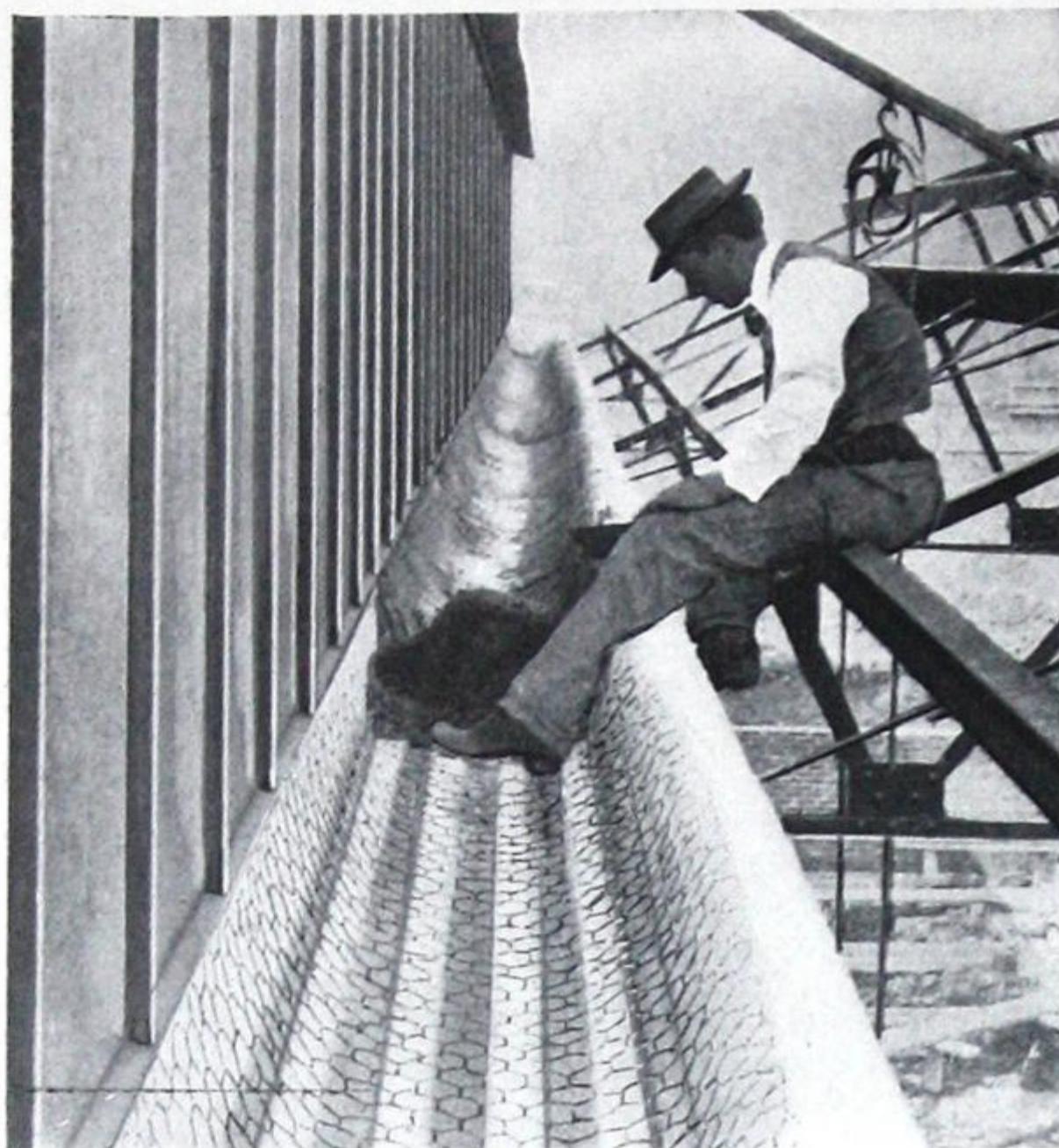
Asbestos Protected Metal. The floor is Asbestosteel construction its entire length



ARMSTRONG CORK COMPANY, BEAVER FALLS, PA.

Showing the cement plaster being applied to Asbestosteel vertical lath walls of a storage bin

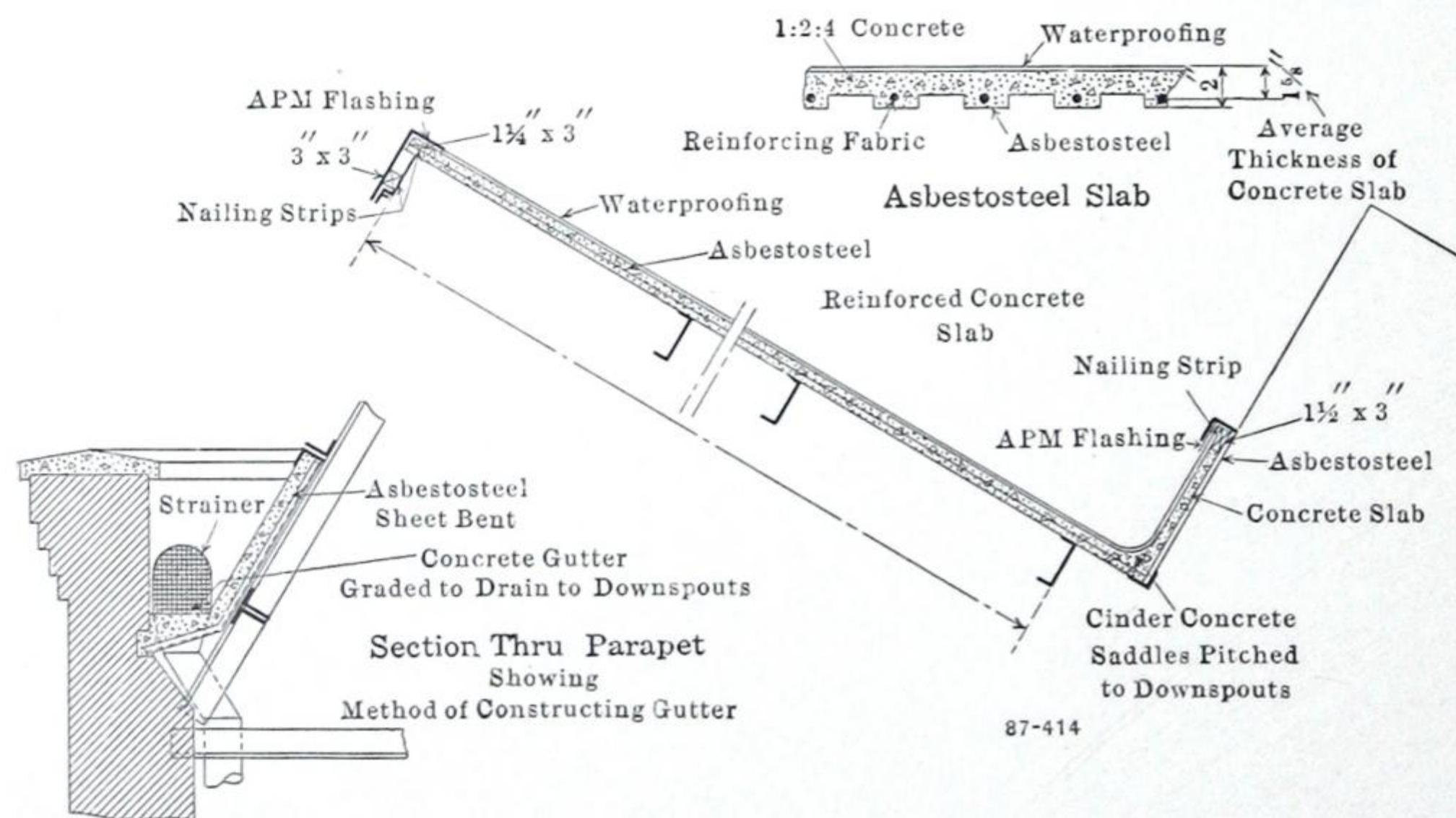
## ASBESTOSTEEL GUTTERS



Covering the wire mesh reinforcement of an Asbestosteel sawtooth gutter with concrete. Asbestosteel concrete gutters are adapted to any valley or sawtooth construction.

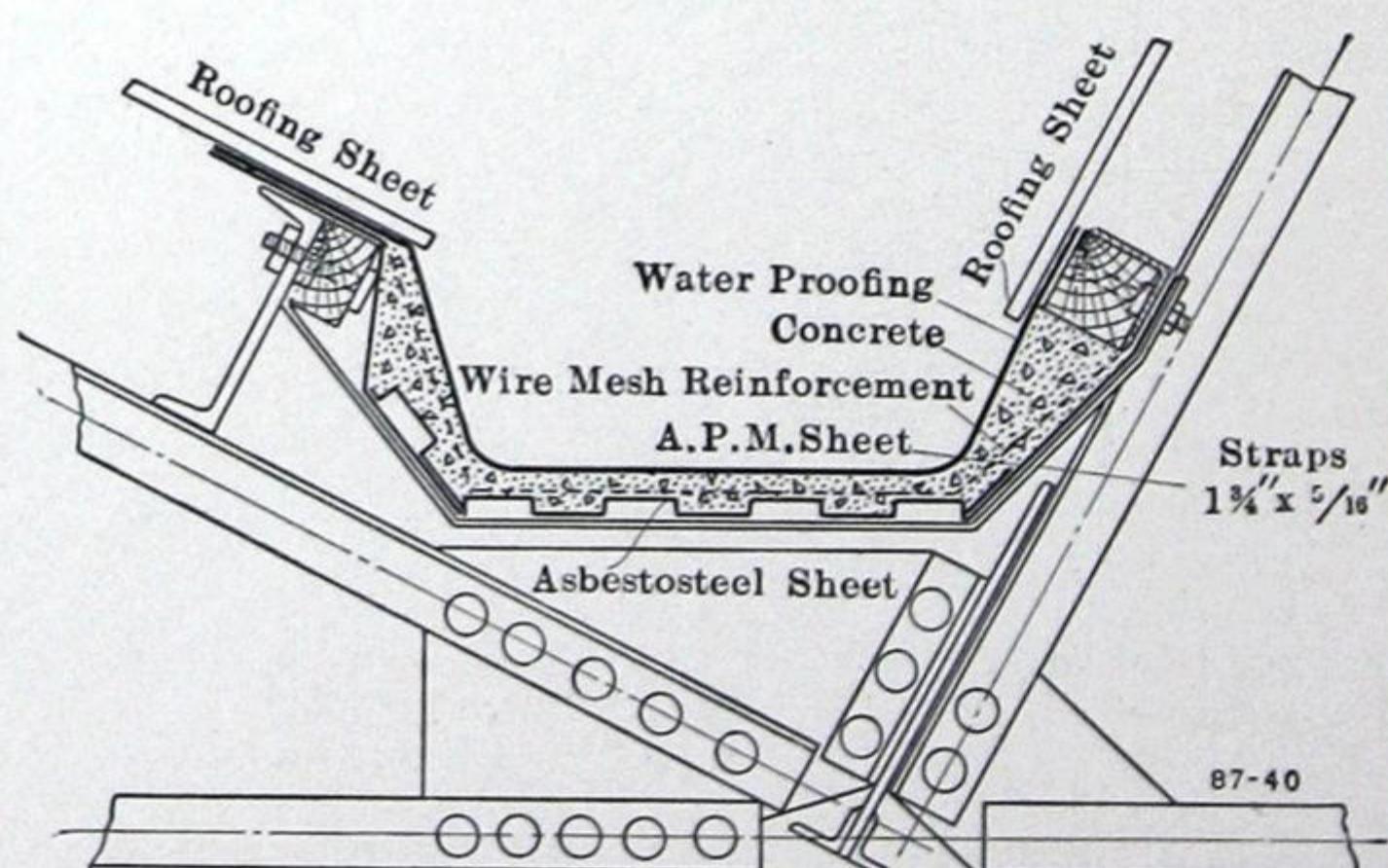


Asbestosteel valley gutter finished, ready for waterproofing. The concrete fills the corrugations, providing an even surface for the application of the tar and gravel or whatever the waterproofing may be.



Section of Asbestosteel sawtooth construction. It is quickly and cheaply erected—drainage provided by grading cinder concrete fill in gutters to the downspouts.

Section of Asbestosteel Gutter construction. Iron straps, fastened to purlins used in the roof construction, support the Asbestosteel sheet. No extra steel framing is needed. Drainage is provided for either by regulation in the length of the supporting straps or by varying the thickness of the concrete slab. It is very strong, yet lighter in weight than any other type of solid gutter suitable for the purpose. It will withstand without damage all service and traffic to which it may be subjected by window cleaners, etc. Being erected without the use of temporary forms, it can be placed rapidly and without skilled labor. It is adaptable to any type of roof framing and any standard type of drainage connections may be employed. It is permanently watertight. It is lower in cost than any other permanent gutter.



## BRIEF FORM OF SPECIFICATION FOR ASBESTOSTEEL ROOFING

Roof shall be of Asbestosteel Concrete Construction, as designed by the Asbestos Protected Metal Company of Beaver Falls, and shall be constructed in exact accordance with the printed specification of that company. The underside of the Asbestosteel constitutes the white ceiling and shall not be plastered.

TABLE OF SAFE LOADS IN POUNDS PER SQUARE FOOT  
FOR ASBESTOSTEEL SLABS

Style	Average Thickness of Slabs	Resisting Moments per Foot Width—in Pounds per Square Inch	Span in Feet							
			3	4	5	6	7	8	9	10
As- 1	1 $\frac{1}{8}$ "	568	53	30						
As- 2	1 $\frac{3}{8}$ "	804	75	42						
As- 3	1 $\frac{5}{8}$ "	1417	131	74	47					
As- 4	1 $\frac{7}{8}$ "	2218	205	116	74	52				
As- 5	2 $\frac{5}{8}$ "	2947	273	154	98	69				
As- 6	2 $\frac{7}{8}$ "	3558	330	185	119	82	61			
As- 7	2 $\frac{9}{8}$ "	4231	392	220	141	98	72			
As- 8	2 $\frac{11}{8}$ "	4881	452	254	163	113	83	64		
As- 9	3 $\frac{1}{8}$ "	5772	534	301	193	134	100	76		
As-10	3 $\frac{3}{8}$ "	7865	728	410	262	182	134	102	81	66
As-11	3 $\frac{7}{8}$ "	10300	953	537	343	238	175	134	106	86

Weight of Concrete—12.5 Lbs. per Square Foot, 1 Inch Thick.

$$M = \frac{1}{16} wl^2$$

(Weight of Slab Included.)

TABLE EXPLAINING ASBESTOSTEEL SLABS  
FOR VARIOUS SPANS

Style	Distance Between Purlins	Thickness of Slab			Gauge of Asbestosteel	Diameter of Rods or Wire Mesh	Weight of Slab per Square Foot
		Minimum	Average	Maximum			
As- 1	2'-11"	$\frac{3}{4}$ "	1 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	24	None Required	15.6
As- 2	3'- 4 $\frac{1}{2}$ "	1 "	1 $\frac{3}{8}$ "	1 $\frac{3}{4}$ "	24	None Required	18.8
As- 3	4'- 4 $\frac{1}{2}$ "	1 $\frac{1}{4}$ "	1 $\frac{5}{8}$ "	2 "	24	No. 14	21.8
As- 4	5'- 4"	1 $\frac{1}{2}$ "	1 $\frac{7}{8}$ "	2 $\frac{1}{4}$ "	24	No. 14	25.0
As- 5	5'- 9"	2 $\frac{1}{4}$ "	2 $\frac{5}{8}$ "	3 "	24	No. 10	34.3
As- 6	6'- 3"	2 $\frac{1}{2}$ "	2 $\frac{7}{8}$ "	3 $\frac{1}{4}$ "	24	No. 10	37.4
As- 7	6'- 9"	2 $\frac{1}{2}$ "	2 $\frac{7}{8}$ "	3 $\frac{1}{4}$ "	24	No. 9	37.4
As- 8	7'- 3"	2 $\frac{1}{2}$ "	2 $\frac{7}{8}$ "	3 $\frac{1}{4}$ "	24	No. 8	37.4
As- 9	7'- 9"	2 $\frac{3}{4}$ "	3 $\frac{1}{8}$ "	3 $\frac{1}{2}$ "	24	No. 8	40.5
As-10	8'- 9"	3 "	3 $\frac{3}{8}$ "	3 $\frac{1}{2}$ "	24	$\frac{5}{16}$ in.	44.2
As-11	9'- 9"	3 $\frac{1}{2}$ "	3 $\frac{7}{8}$ "	4 $\frac{1}{4}$ "	24	$\frac{5}{16}$ in.	50.3

Safe Live Load—40 Lbs. per Square Foot.  
Wherever possible, distance between purlins should be as above. This will eliminate extra charges for cuts and waste.

Weight of Concrete—12.5 Lbs. per Square Foot, 1 Inch Thick.

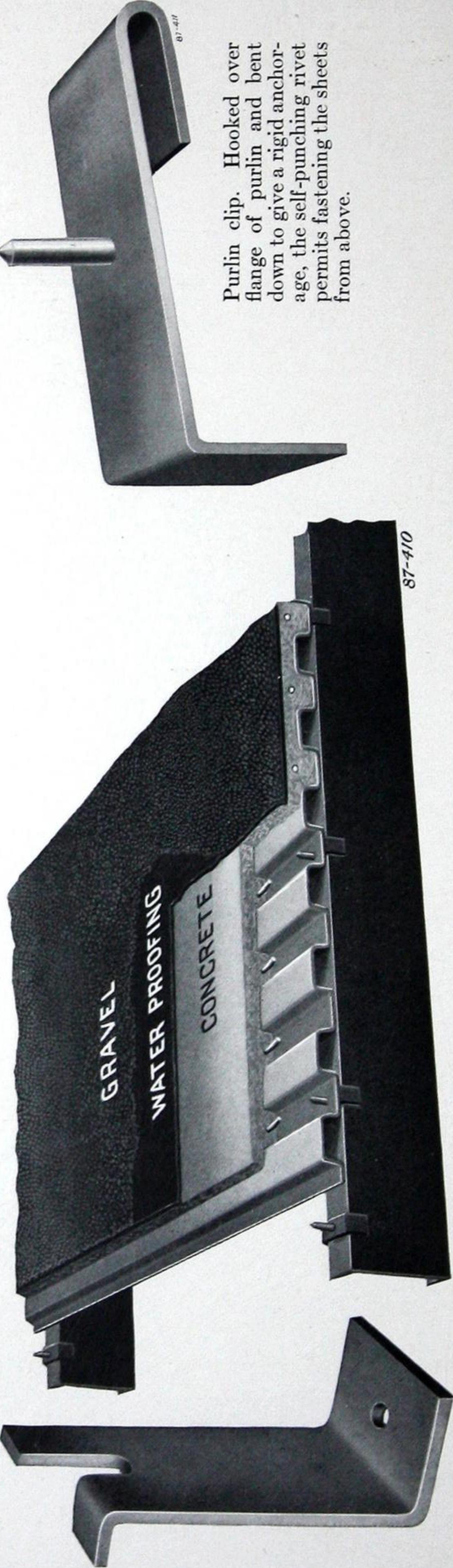
Asbestosteel sheets are made in the following weights and sizes:

STOCK SIZES	Gauge No.	Approximate Weights per 100 square feet	
		Net	Shipping
24 inches wide in even foot lengths, 5 feet to 12 feet inclusive. Covering width of sheets, 24 inches net. In estimating areas add from 3 to 6 per cent for end laps.	26	144	173
	24	182	211
	22	222	251

## SIZE OF PURLINS REQUIRED FOR VARIOUS SPANS

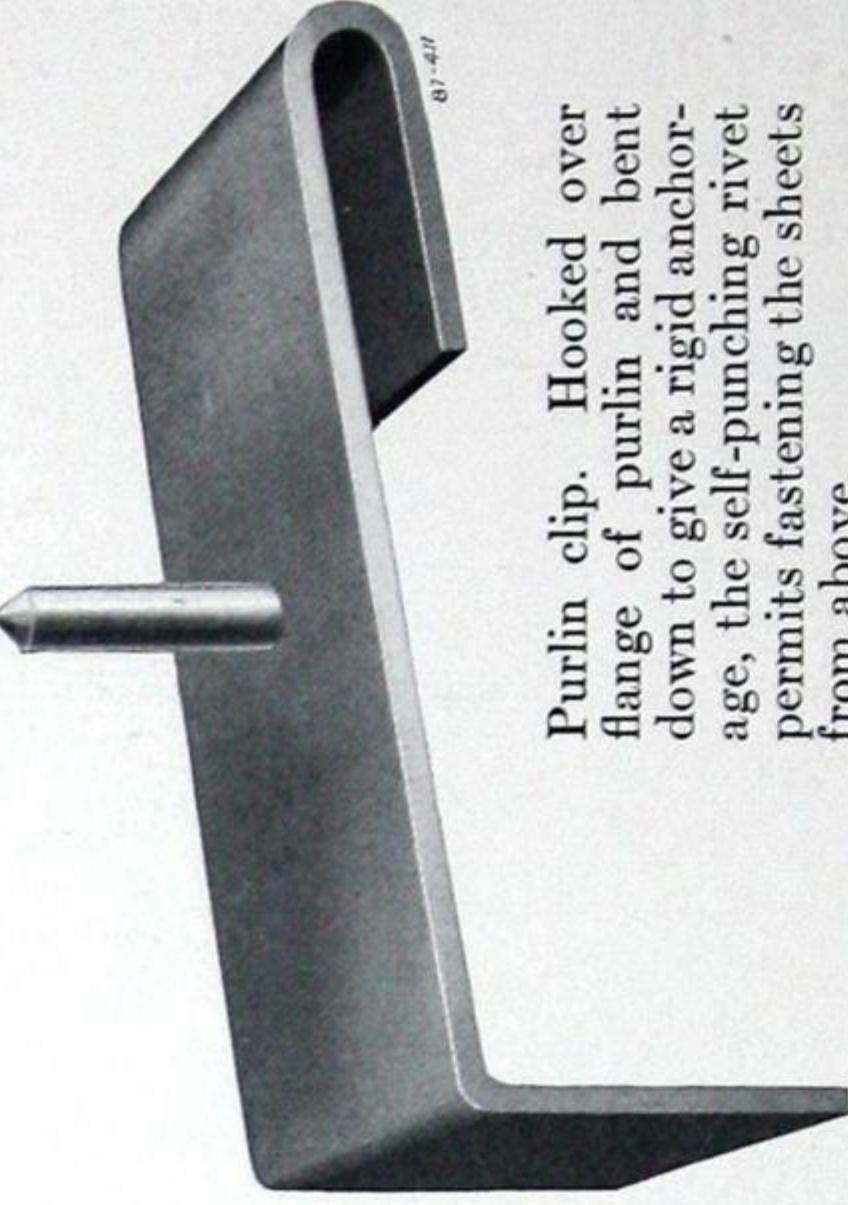
Spacing of Purlins	Average Thickness of Slab	Weight of Slab per Square Foot Pounds	Length of Purlins or Distances between Trusses											
			10 Feet—0 Inches				12 Feet—0 Inches				14 Feet—0 Inches			
			E	I	E	I	E	I	E	I	E	I	E	I
2' 11 "	1 1/8"	15.6	4"	5 1/4 lb	3"	5 1/2 lb	4"	7 1/2 lb	5"	6 1/2 lb	4"	7 1/4 lb	5"	6 1/2 lb
3' 4 1/2"	1 3/8"	18.8	4"	5 1/4"	4"	5 1/2"	4"	7 1/2"	5"	6 1/2"	5"	9 3/4"	5"	9 3/4"
3' 10 1/2"	1 5/8"	21.8	5"	6 1/2"	4"	7 1/2"	5"	9 3/4"	5"	9 3/4"	5"	12 1/4"	6"	12 1/4"
4' 4 1/2"	1 5/8"	21.8	5"	6 1/2"	4"	7 1/2"	5"	9 3/4"	5"	9 3/4"	6"	12 1/4"	6"	12 1/4"
4' 10 1/2"	1 3/4"	23.4	5"	6 1/2"	4"	7 1/2"	5"	9 3/4"	5"	9 3/4"	6"	12 1/4"	6"	12 1/4"
5' 4 "	1 1/8"	25.0	6"	8 "	5"	9 3/4 "	7"	9 3/4 "	5"	9 3/4 "	6"	12 1/4 "	6"	12 1/4 "
5' 9 "	2 5/8"	34.3	6"	8 "	5"	9 3/4 "	7"	9 3/4 "	6"	9 1/2"	7"	15 "	7"	15 "
6' 3 "	2 7/8"	37.4	6"	8 "	5"	9 3/4 "	8"	11 1/4 "	6"	12 1/4 "	9"	13 1/4 "	9"	13 1/4 "
6' 9 "	2 7/8"	37.4	7"	9 3/4 "	6"	12 1/4 "	8"	11 1/4 "	6"	12 1/4 "	9"	13 1/4 "	9"	13 1/4 "
7' 3 "	2 7/8"	37.4	7"	9 3/4 "	6"	12 1/4 "	8"	11 1/4 "	7"	15 "	10"	15 "	10"	15 "
7' 9 "	3 1/8"	40.5	7"	9 3/4 "	6"	12 1/4 "	9"	13 1/4 "	7"	15 "	10"	15 "	10"	15 "
8' 9 "	3 3/8"	44.2	8"	11 1/4 "	6"	12 1/4 "	9"	13 1/4 "	7"	15 "	10"	15 "	10"	15 "
9' 9 "	3 7/8"	50.3	9"	13 1/4 "	7"	15 "	10"	15 "	8"	18 "	12"	20 1/2 "	15"	33 "

Concrete—150 Lbs. per Cubic Foot. Asbestosteel No. 26—1.44 Lbs. per Square Foot. Asbestosteel No. 24—1.82 Lbs. per Square Foot. Except on long spans, the channels should be used, as they are more economical of structural steel than I-beams.



Bridge support, to carry reinforcement over purlins for long spans and heavy loads.

87-410

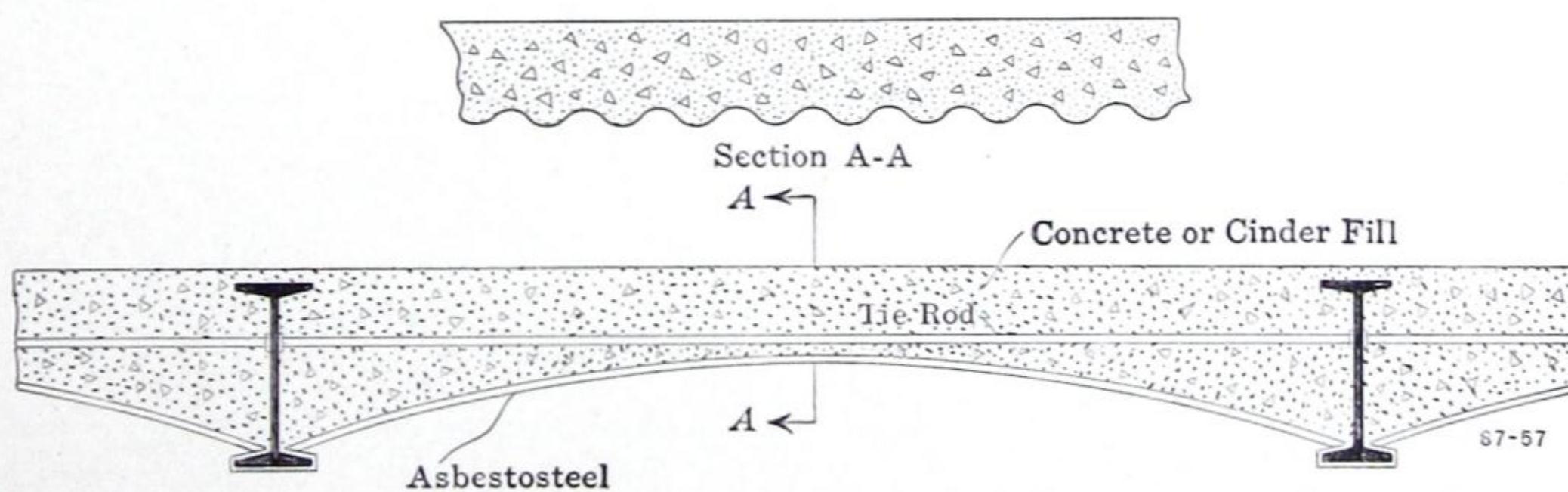


Purlin clip. Hooked over flange of purlin and bent down to give a rigid anchorage, the self-punching rivet permits fastening the sheets from above.

Asbestosteel slab on channel purlins, indicating the relative location of the APM rectangular corrugated sheet, the concrete, the reinforcement rods and the waterproofing.

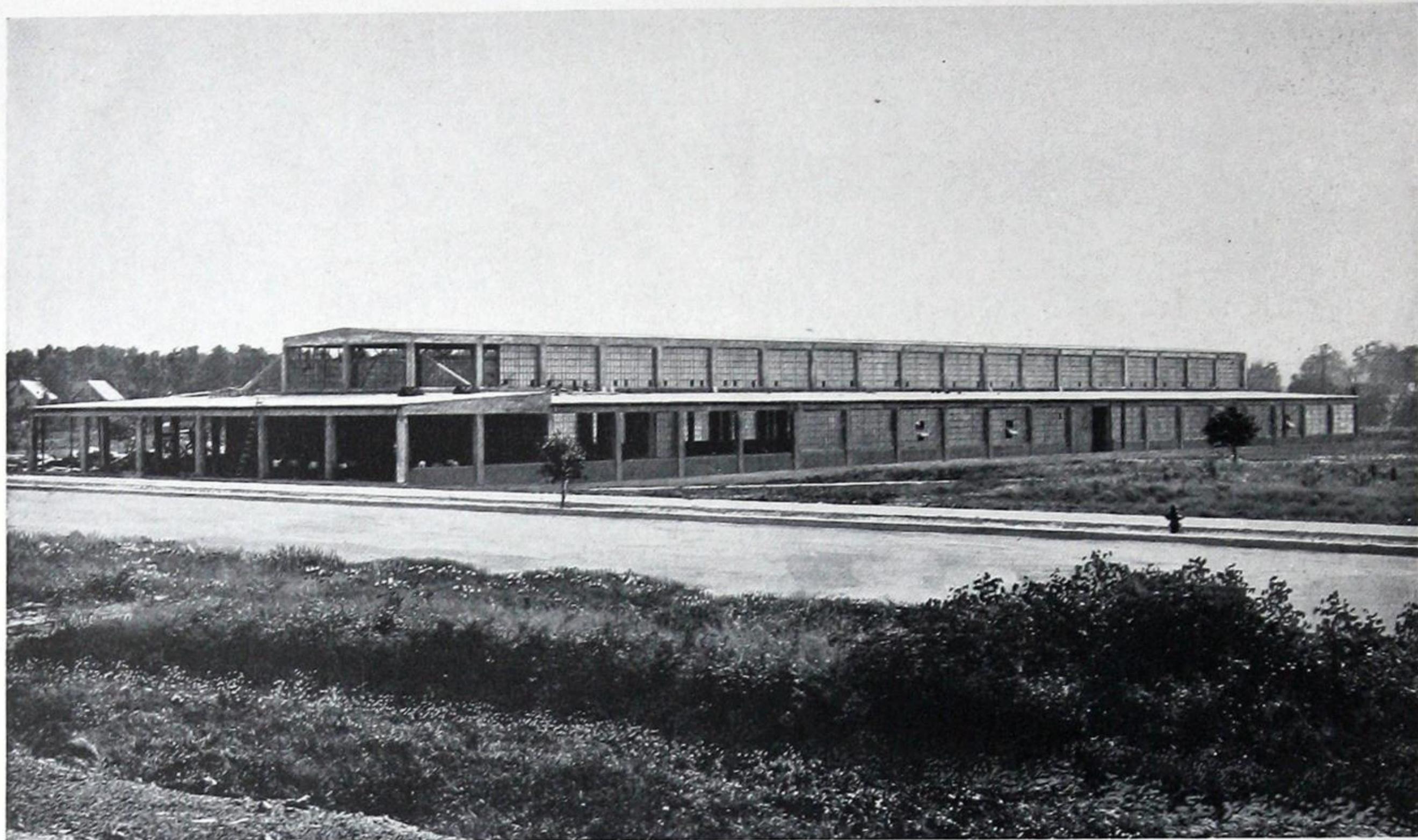
### PLACING THE SELF-PUNCHING CLIP RIVETS

In the erection of an Asbestosteel roof, rectangularly corrugated Asbestos Protected Metal is laid directly upon the purlins. No furring strips are used. Self-punching clip rivets are slipped over the steel purlins, then the Asbestos Protected Metal is laid on the points of the rivets and driven through with a riveting tool and the rivet is set up. The Asbestos Protected Metal is absolutely non-corrosive, its rectangular corrugations furnish maximum strength with minimum weight of material. The underside presents an unusually fine appearance. Indeed, any amount of finishing could scarcely improve the matte-white beamed effect of the Asbestosteel. Furthermore, this Asbestos surface is rendered permanent and impervious by impregnation applied in the last stage of manufacture of the Asbestos Protected Metal. This is the only light concrete roof in which all work is done from the top.



**ASBESTOSTEEL ARCHES FOR HEAVY FLOOR LOADS**  
Sheets made to exact span and curved to proper radius at the factory

A S B E S T O S   P R O T E C T E D   M E T A L   C O M P A N Y

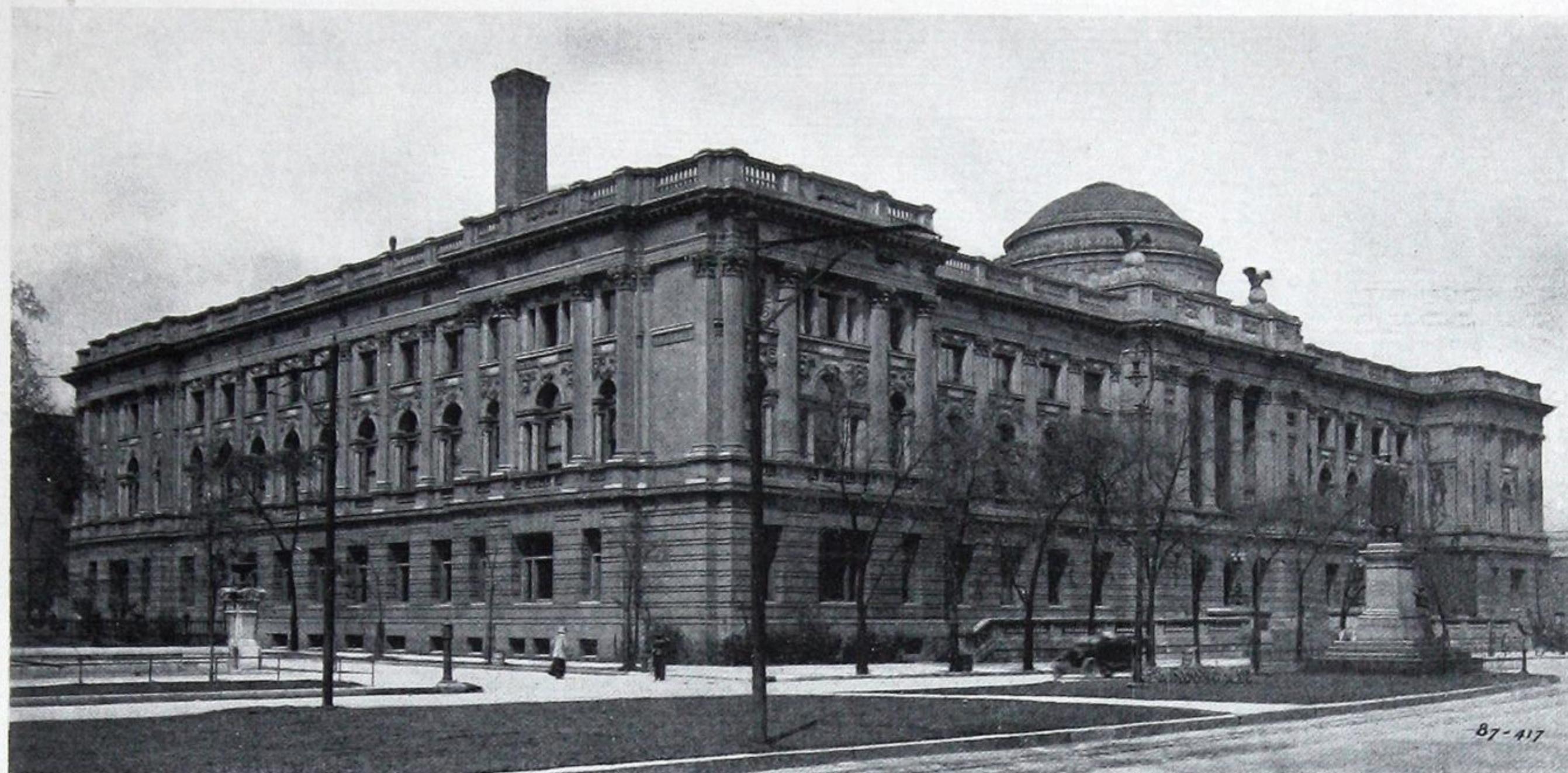


CHANDLER MOTOR CAR COMPANY, CLEVELAND, OHIO  
50,000 square feet of Asbestosteel roof



ARMSTRONG CORK COMPANY, BEAVER FALLS, PA.

Lean-to shed of Asbestosteel over ovens. The manner of applying Asbestosteel is clearly shown. First the sheets are applied to the structural framework, then the mesh is fastened over the sheets. Concrete is next applied and finally the water-proofing. All work is done from the top. Speed and efficiency result.



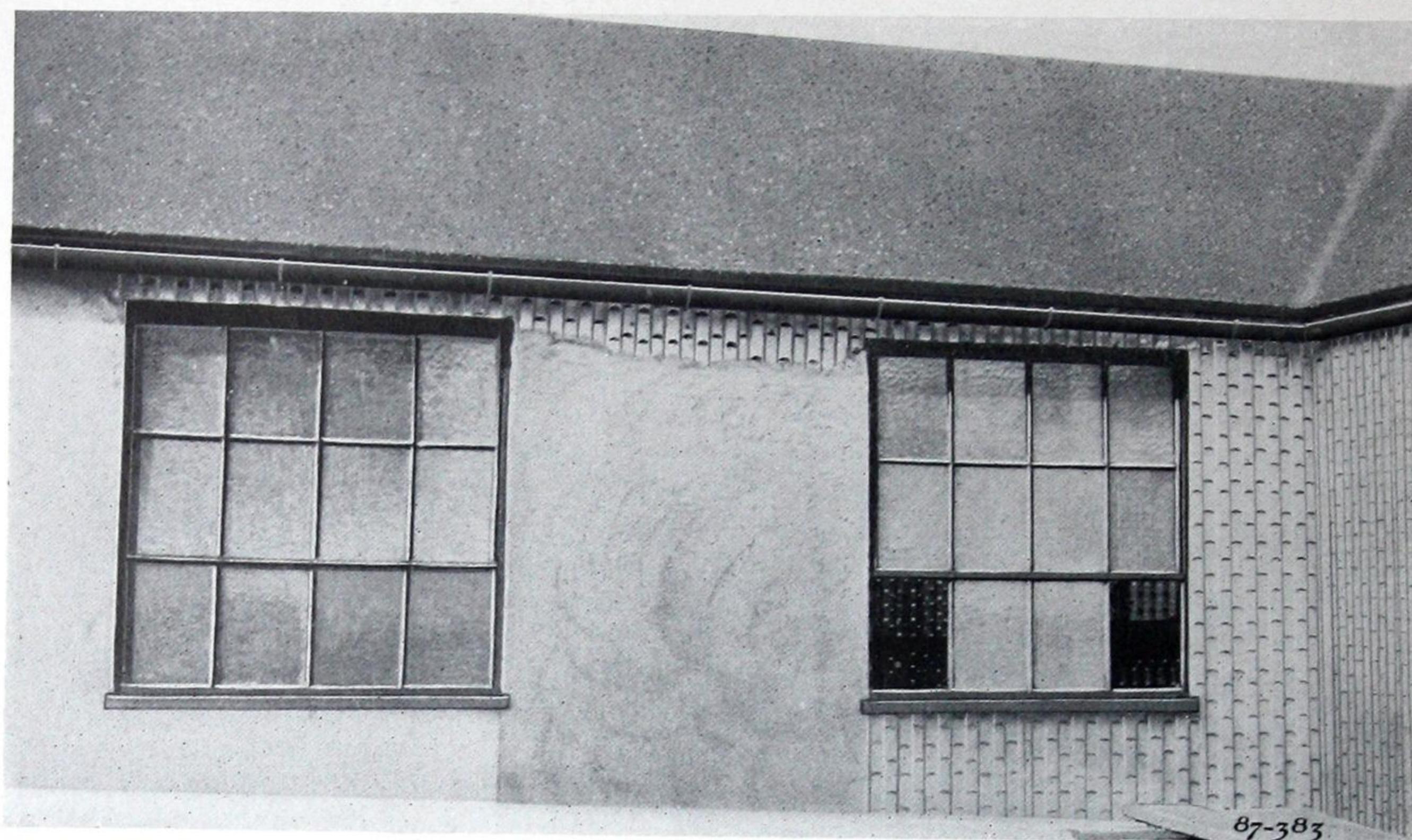
PUBLIC LIBRARY OF MILWAUKEE, WIS.

Asbestosteel has been used to cover the new addition recently completed. The efficiency of Asbestosteel warrants its adoption for the highest types of buildings



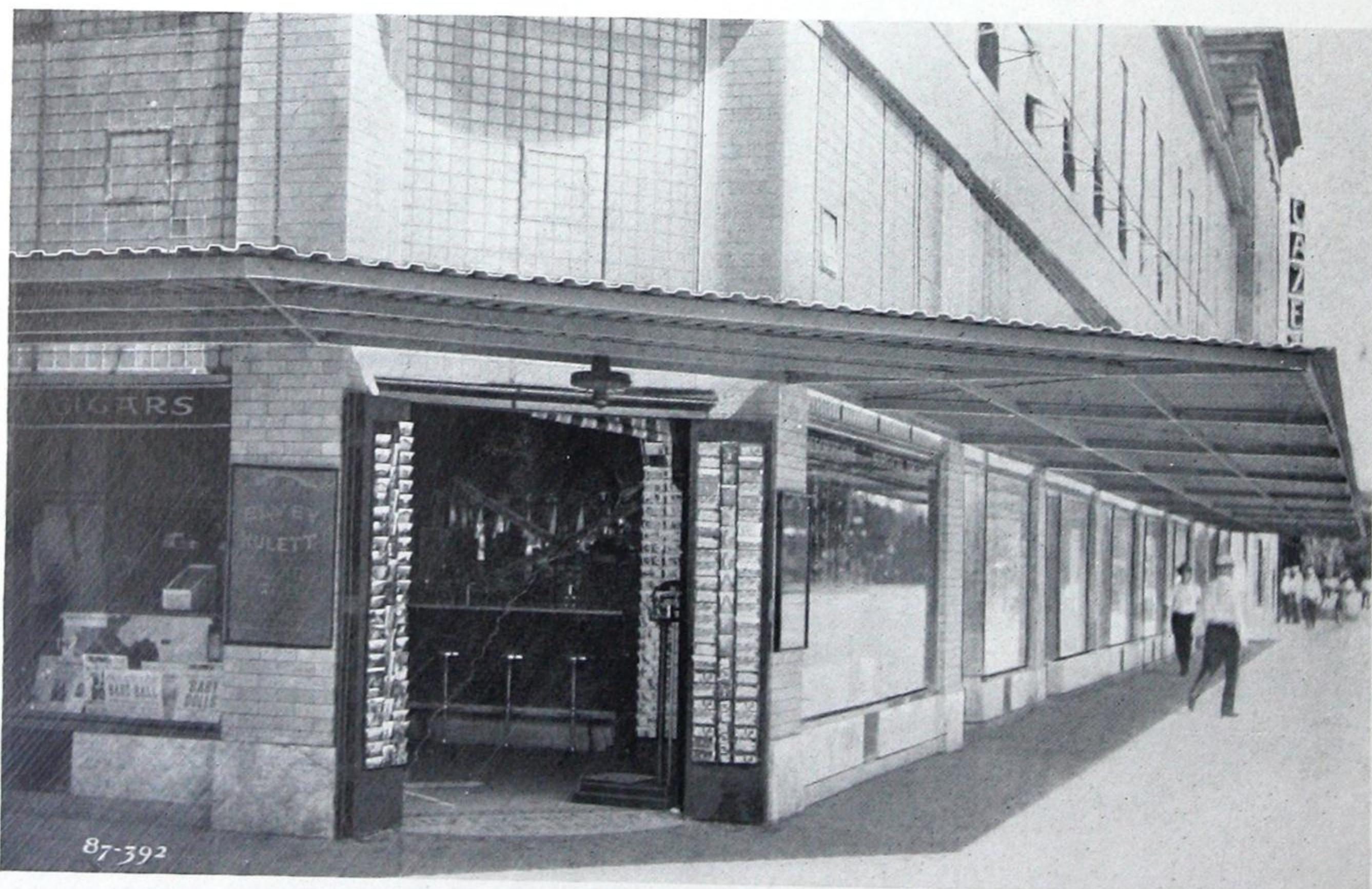
JOHN LAUSON MFG. COMPANY, NEW HOLSTEIN, WIS.

Interior view of assembly shop. Asbestosteel sawtooth construction diffuses light, eliminates shadows and remains permanently attractive

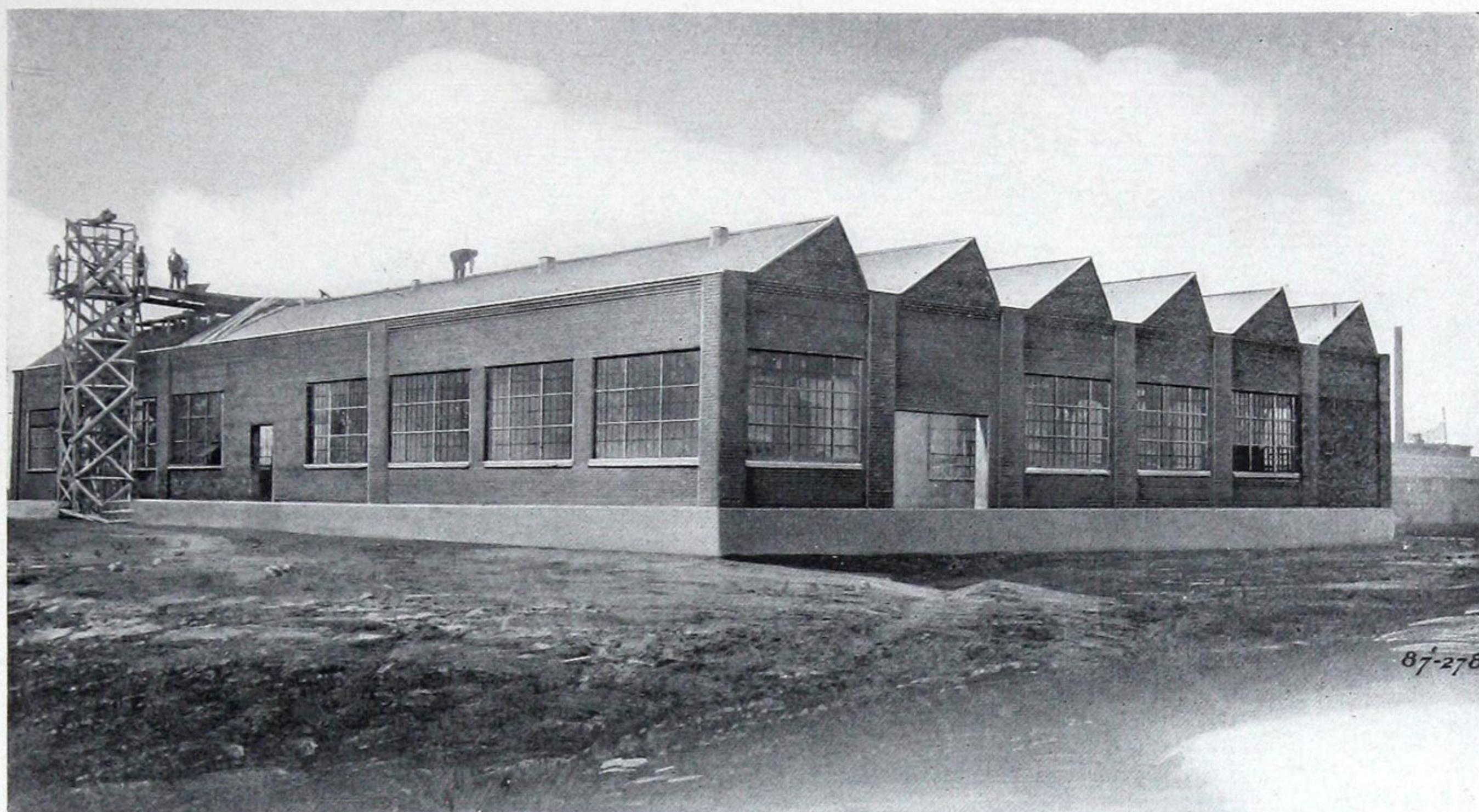


CONSOLIDATED ELECTRIC LIGHT AND POWER CO., BALTIMORE, MD.  
WESTPORT POWER-HOUSE

This small view shows a detail of Asbestosteel wall construction. Asbestosteel lath (studless type) is applied directly to steel girts at the top and bottom of each sheet. Cement mortar is then applied on both sides of the metal form and interlocks through the crescent-shaped perforations, making a solid, permanently rust and crack-proof wall of minimum thickness and maximum strength.

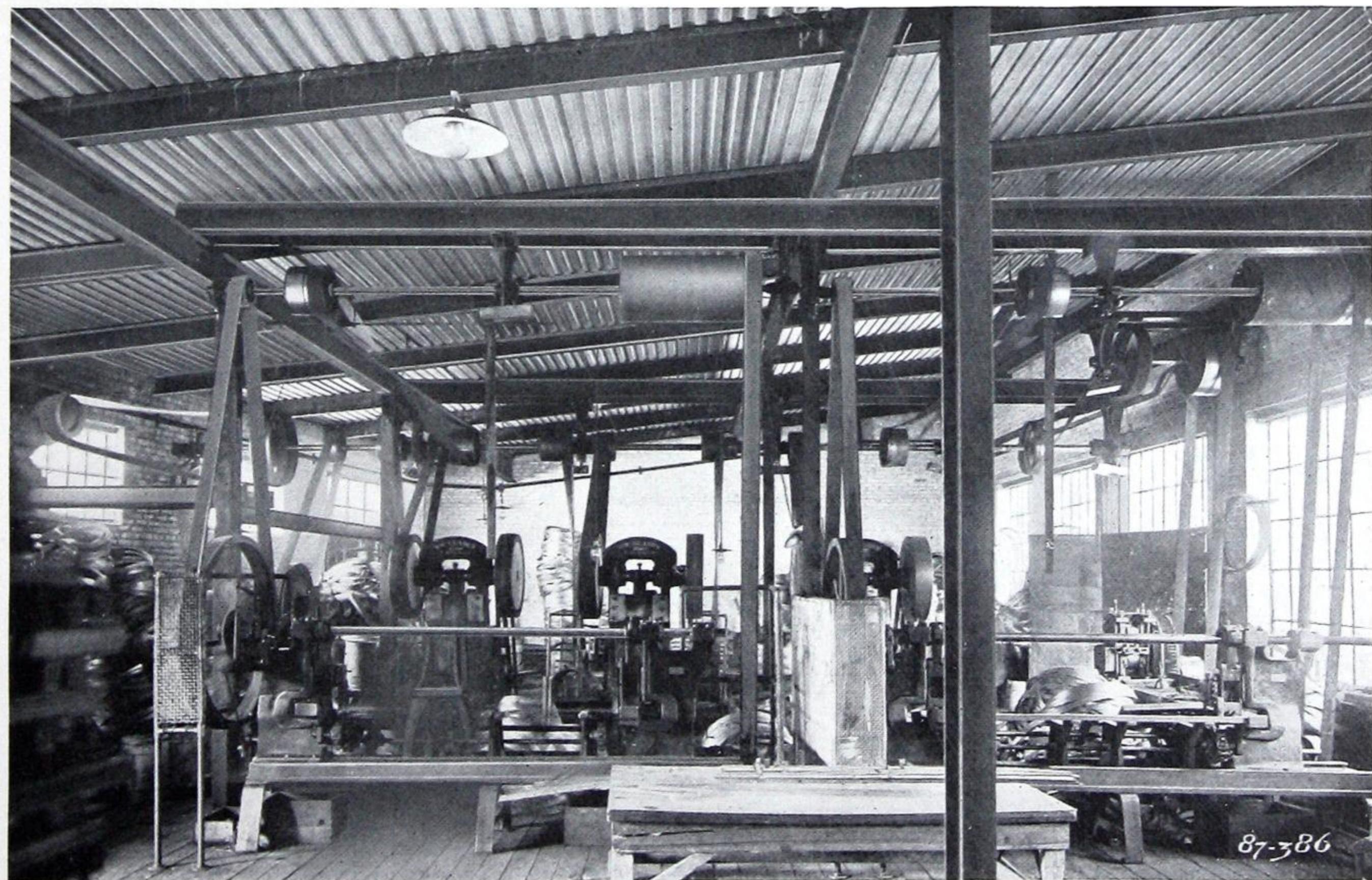


O'NEILL BUILDING, PHOENIX, ARIZONA  
Illustrating the use of Asbestosteel in the construction of permanent canopies



REMINGTON ARMS-UNION METALLIC CARTRIDGE COMPANY, WINDSOR, ONT.

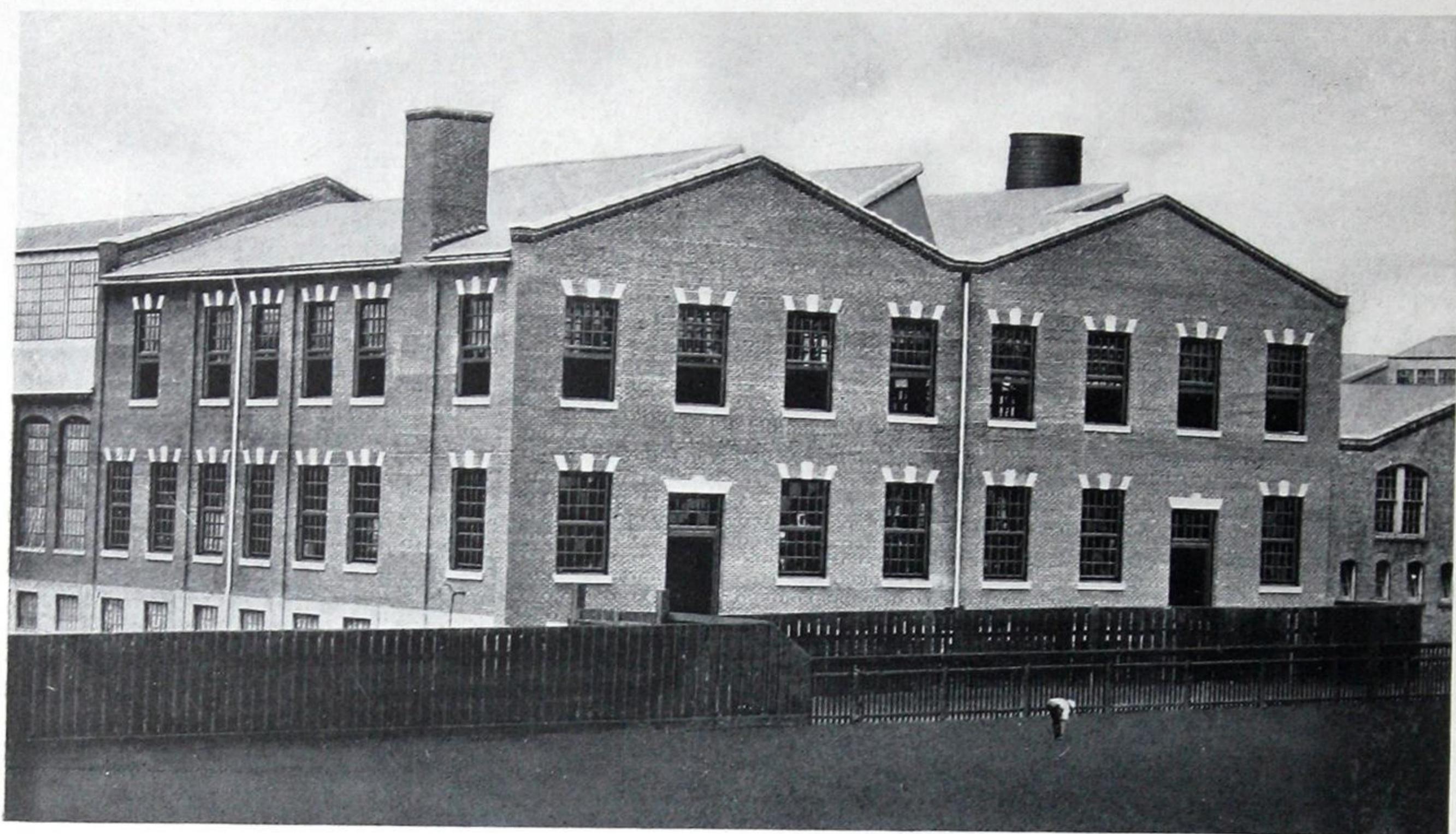
High-class industrial building—in all respects permanent, well lighted and well ventilated  
Asbestosteel Sawtooth Construction



VACUUM OIL COMPANY, ROCHESTER, N. Y.

Interior of hoop building—roof of Asbestosteel

A S B E S T O S   P R O T E C T E D   M E T A L   C O M P A N Y



AMERICAN PULLEY COMPANY, PHILADELPHIA, PA.  
It is possible to satisfactorily develop roof and gutter details to meet any given requirements  
by the use of Asbestosteel construction

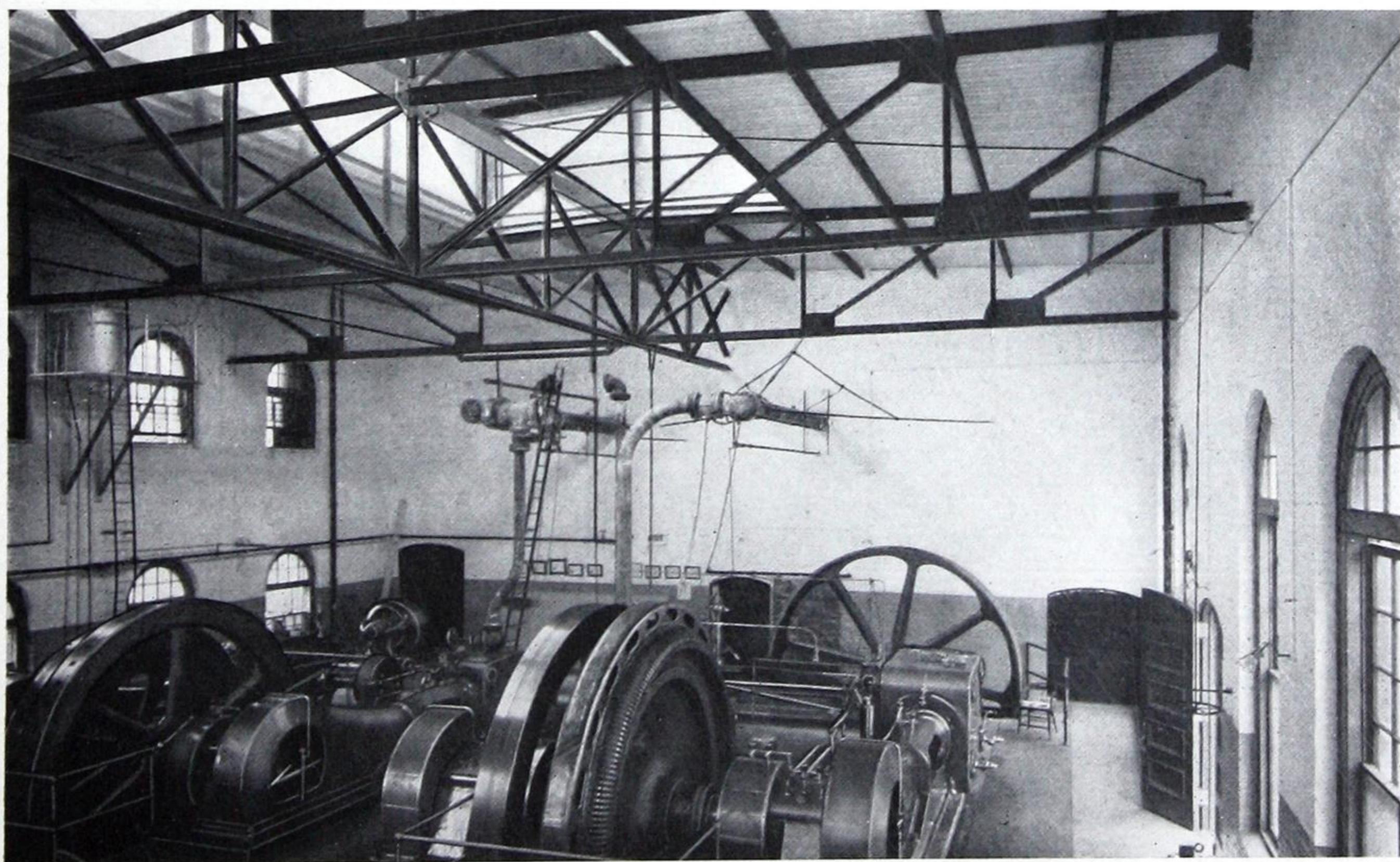


AMERICAN PULLEY COMPANY, PHILADELPHIA, PA.  
Showing the white underside of Asbestosteel roof construction. Ideal working conditions prevail



PEABODY ELECTRIC LIGHT COMPANY, PEABODY, MASS.

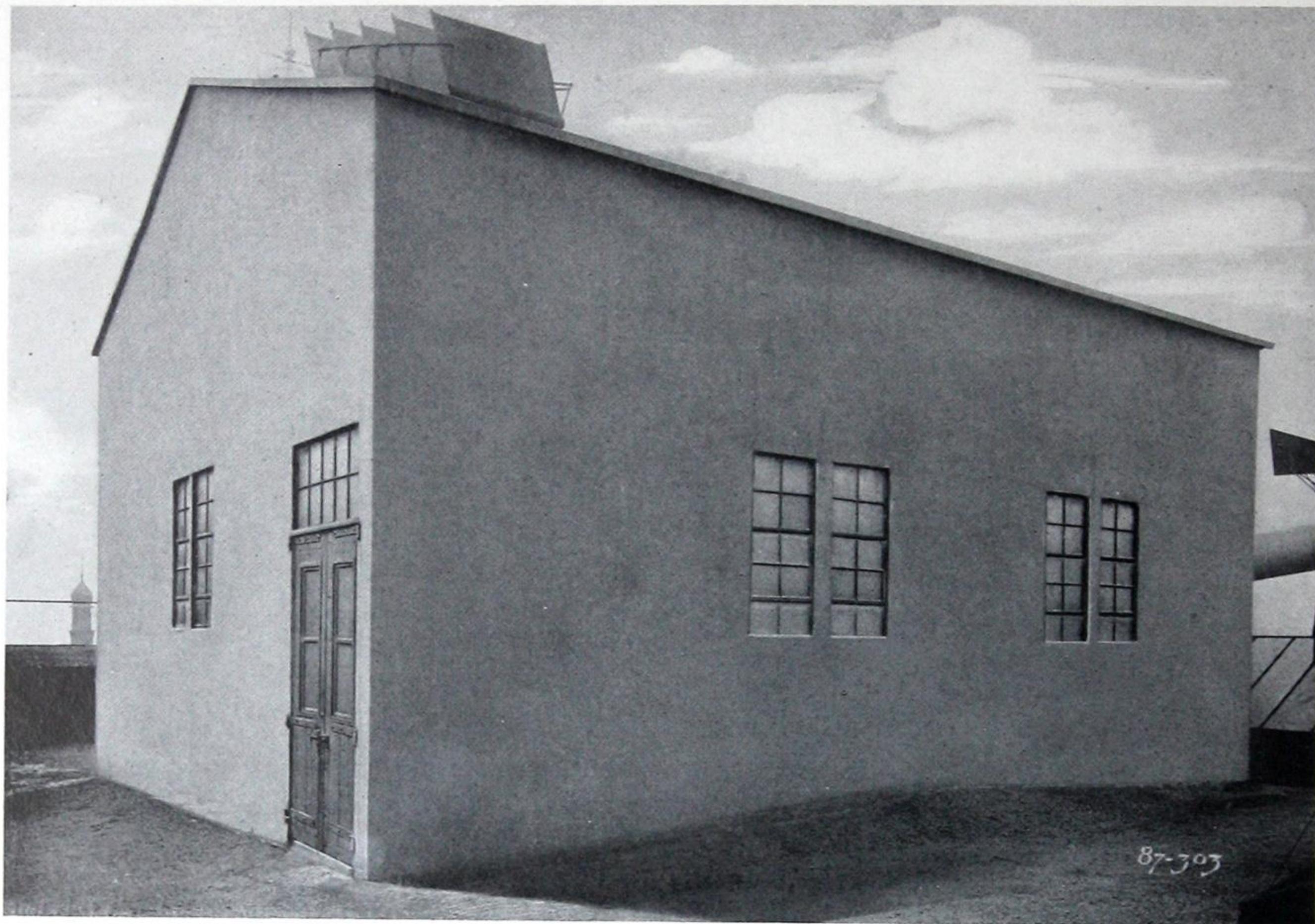
The roof of this power house was installed while the plant was in operation. It is possible to do this with Asbestosteel because of its unique characteristics. This advantage may be utilized by engineers in many cases.



PEABODY ELECTRIC LIGHT COMPANY, PEABODY, MASS.

Showing interior of Asbestosteel roof

A S B E S T O S   P R O T E C T E D   M E T A L   C O M P A N Y



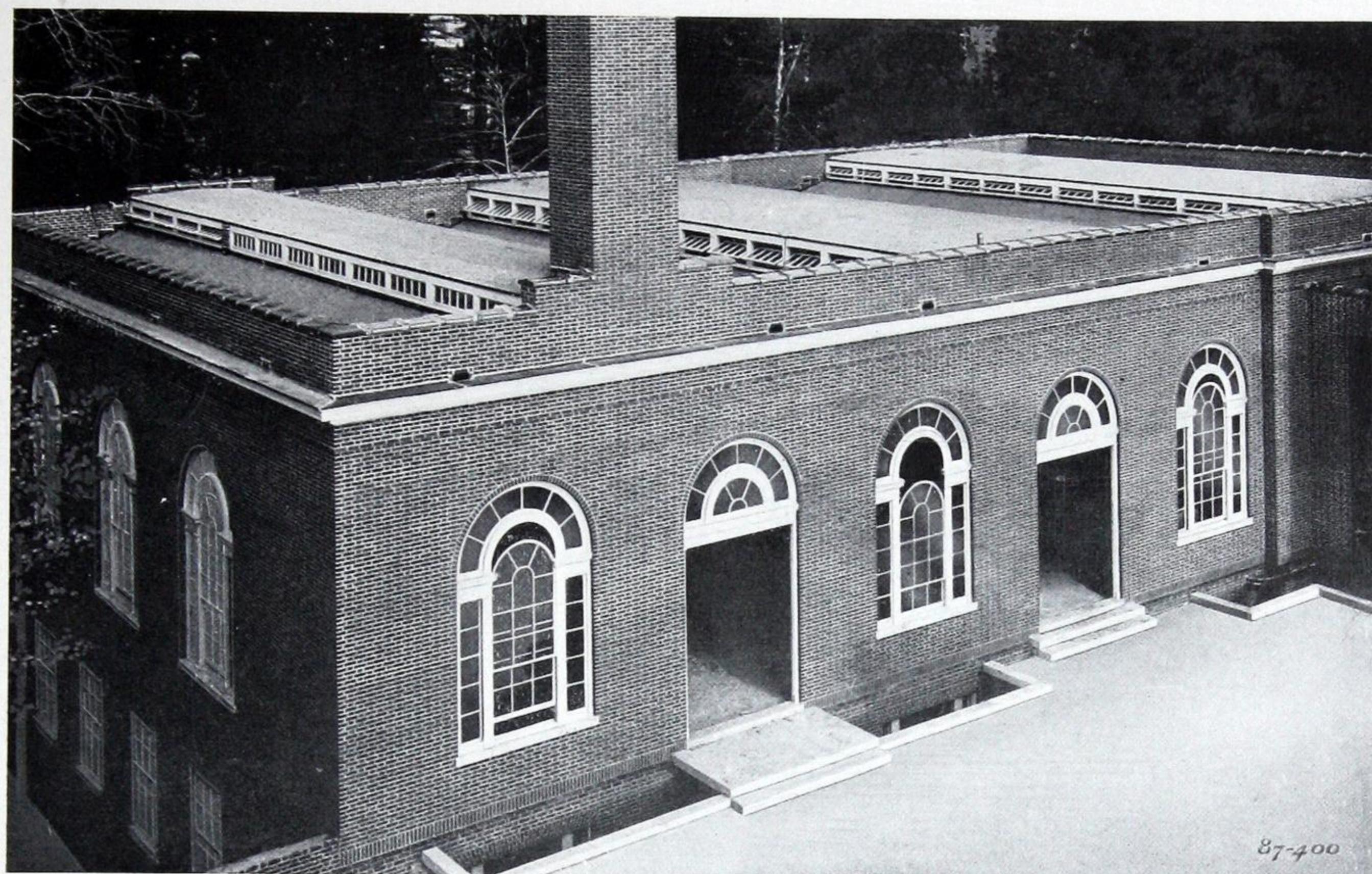
VICTOR TALKING MACHINE COMPANY, CAMDEN, N. J.

Asbestosteel roofs and walls are particularly desirable for pent house construction because of their great strength and light weight



HOME FOR THE AGED, NEW BRIGHTON, PA.

Interior partitions, roof and floors of Asbestosteel

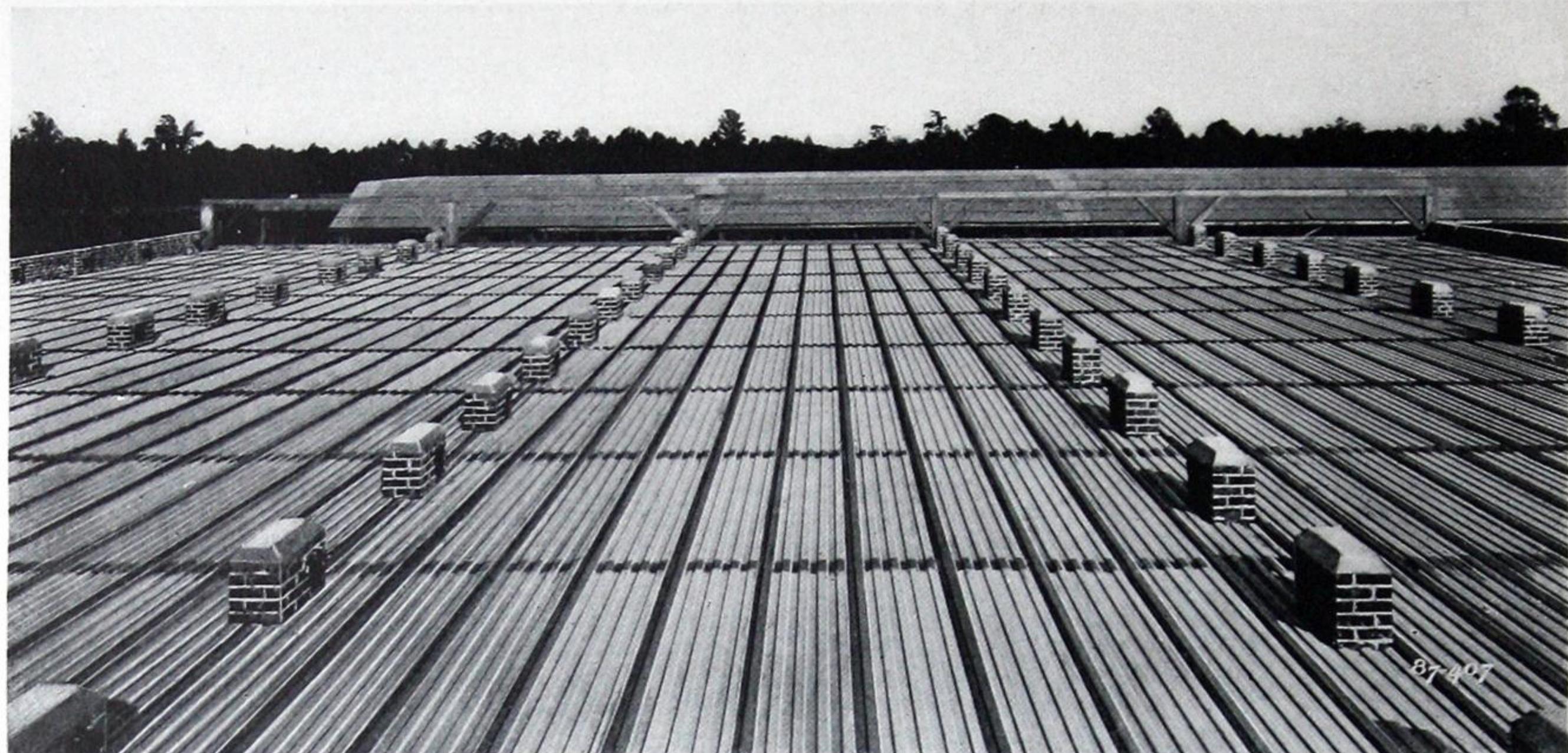


HOMEWOOD POWER-HOUSE, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.  
Asbestosteel roof on thoroughly modern power house



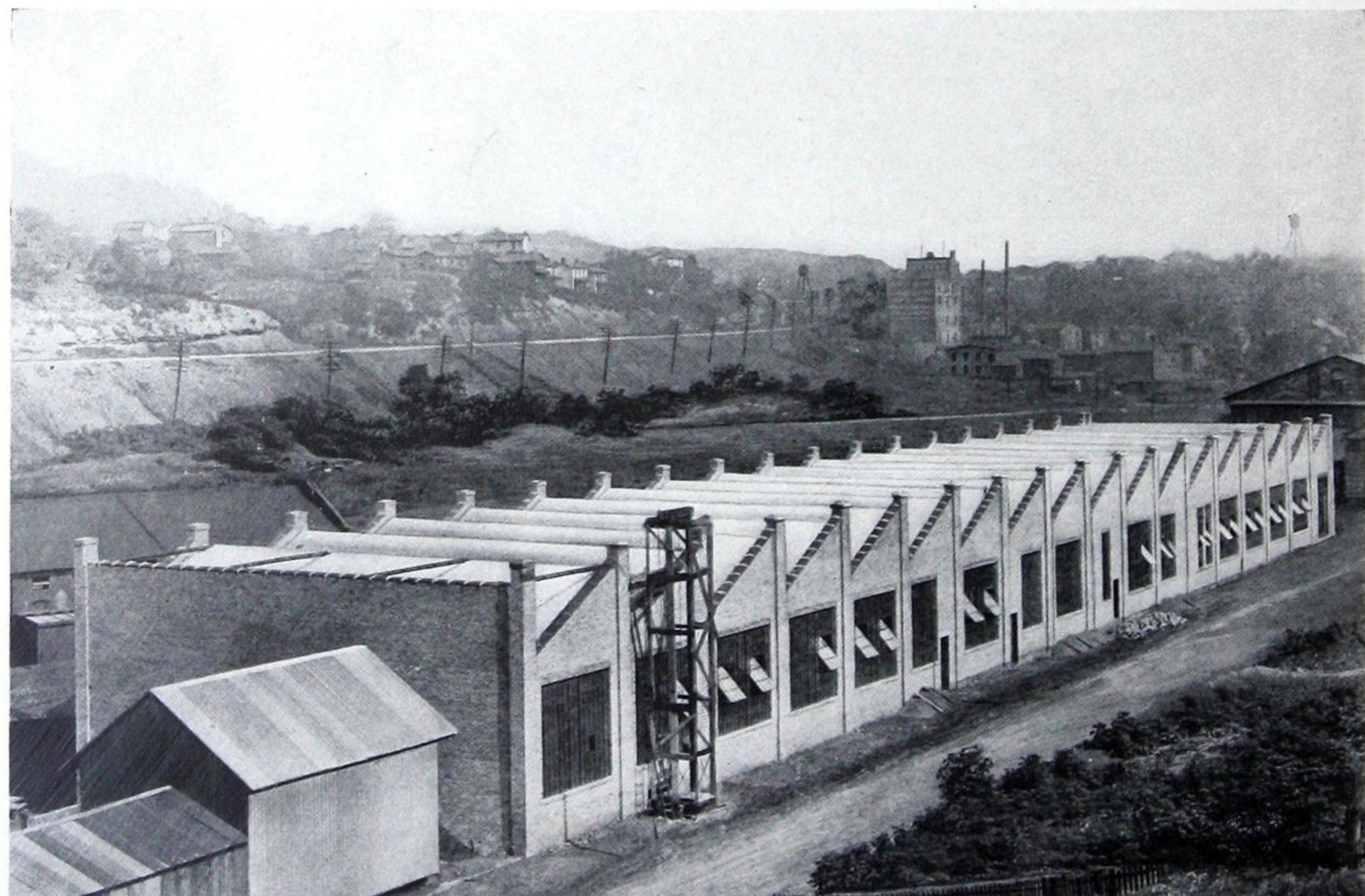
HOMEWOOD POWER-HOUSE, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.  
Showing underside of Asbestosteel roof—complete without paint or plaster

A S B E S T O S   P R O T E C T E D   M E T A L   C O M P A N Y



DILL-CRAMER-TRUITT CORPORATION, SUFFOLK, VA.

Dry kilns covered with Asbestosteel. This photograph was taken before the application of the reinforcing fabric and concrete



KEYSTONE DRILLER COMPANY, BEAVER FALLS, PA.

Typical installation of Asbestosteel Sawtooth Construction for forge shop roofs. Clear floor space is provided, ideal lighting and ventilation conditions prevail and the entire construction is immune to any deteriorating influences of coal gas from open forges.



THE ASBESTOS PROTECTED METAL COMPANY is the original manufacturer of Asbestos Protected Metal and owns and controls the basic patents covering the material, the processes and the methods employed. It maintains its own laboratories for experiment and research, and in consequence of the care and attention given to every detail and to each stage of the manufacture, a uniformly high grade, economical and meritorious product is assured. Asbestos Protected Metal in its various forms, the processes of manufacture and the machinery employed are covered by United States patents dated as follows:

April 3, 1906	Nov. 13, 1906	Sept. 5, 1911	April 8, 1913	July 29, 1913	Sept. 16, 1913
April 24, 1906	Nov. 13, 1906	Sept. 5, 1911	April 22, 1913	July 29, 1913	Sept. 16, 1913
June 12, 1906	Jan. 8, 1907	Sept. 5, 1911	July 29, 1913	July 29, 1913	Sept. 16, 1913
					Nov. 3, 1914

Proposals for Asbestosteel construction, prices of Asbestos Protected Metal products, the Company's literature, the services of its Engineering Department or any other information regarding the Asbestos Protected Metal Company's specialties may be obtained by addressing the Company at any of its offices or agencies.

### OTHER PRODUCTS

APM . . . . .	Corrugated Sheets	APM . . . . .	Special Stucco Lath (for residences)
APM . . . . .	Special Beaded Sheets	APM . . . . .	Flexible Asbestos Shingles
APM . . . . .	Clapboard Siding	APM . . . . .	Asbestos Tiles
APM . . . . .	Flat Sheets	APM . . . . .	Asbestos Roll Roofing
APM . . . . .	Ridge Cap, Flashings and Trim	APM . . . . .	Asbestos Building Papers
APM . . . . .	Standard Louvres	APM . . . . .	Special Roof Paint
APM . . . . .	Skylight Bars	APM . . . . .	Roof Cements
	APM . . . . .	APM . . . . .	Special Roofing Nails and Fasteners

### LIST OF OFFICES AND AGENCIES

MAIN OFFICE AND WORKS . . . . . BEAVER FALLS, PA.  
ASBESTOS FELT WORKS . . . . . WALTHAM, MASS.

ATLANTA, GA. . . . .	Chandler Building	OMAHA, NEB. . . . .	Woodmen of the World Building
BALTIMORE, MD. . . . .	Equitable Building	PHILADELPHIA, PA. . . . .	Real Estate Trust Building
BIRMINGHAM, ALA. . . . .	American Trust Building	PHOENIX, ARIZONA . . . . .	Rich Hardware Company
BOSTON, MASS. . . . .	Equitable Building	PITTSBURGH, PA. . . . .	223 Fourth Avenue
BUFFALO, N. Y. . . . .	Mutual Life Building	PORTLAND, OREGON . . . . .	Lumber Exchange Building
CHARLESTON, W. VA. . . . .	905 Kanawha Street	ST. LOUIS, Mo., St. Louis Roofing Co., 2124 Market St.	
CHICAGO, ILL. . . . .	Fisher Building	SAN ANTONIO, TEXAS . . . . .	Bedell Building
CINCINNATI, OHIO . . . . .	Gayety Theatre Building	SAN FRANCISCO, CAL. . . . .	Holbrook Building
CLEVELAND, OHIO . . . . .	Union Building	SCRANTON, PA. . . . .	Board of Trade Building
DALLAS, TEXAS . . . . .	2500 Main Street	SEATTLE, WASH. . . . .	Globe Building
DETROIT, MICH. . . . .	Chamber of Commerce Building	SYRACUSE, N. Y. . . . .	Paragon Plaster Co.
EASTON, PA. . . . .	First National Bank Building	TAMPA, FLA. . . . .	107 S. Franklin Street
HARRISBURG, PA. . . . .	P. O. Box 228	TOLEDO, OHIO . . . . .	3125 Scottwood Avenue
HOUSTON, TEXAS . . . . .	Austin and Commerce Streets	TRENTON, N. J. . . . .	206 East Hanover Street
JACKSONVILLE, FLA. . . . .	112 East Bay Street	WILMINGTON, DEL. . . . .	DuPont Building
KANSAS CITY, MO. . . . .	Republic Building	CALGARY, ALBERTA, CAN. . . . .	Canadian Equipment and Supply Company
LOUISVILLE, KY. . . . .	Tyler Building	EDMONTON, ALBERTA, CAN. . . . .	Canadian Equipment and Supply Company
MEMPHIS, TENN. . . . .	Equitable Building	HALIFAX, N. S., CAN. . . . .	G. G. Short Company
MILWAUKEE, WIS. . . . .	Majestic Building	Montreal, P. Q., CAN., Canadian Asbestos Company	
MINNEAPOLIS, MINN. . . . .	McKnight Building	REGINA, SASK., Canadian Equipment and Supply Co.	
NEW ORLEANS, LA. . . . .	814 Howard Avenue		
NEW YORK, N. Y. . . . .	52 Broadway		

EXPORT DEPARTMENT, 52 BROADWAY, NEW YORK

CABLE ADDRESS, "ASPMET, NEW YORK"

DESIGNED AND WRITTEN BY—  
PHOTOGRAPHS, ART WORK, ENGRAVINGS  
AND PRINTING UNDER THE DIRECTION OF—  
RAY D. LILLIBRIDGE INCORPORATED  
TECHNICAL ADVERTISING  
111 BROADWAY, NEW YORK CITY



